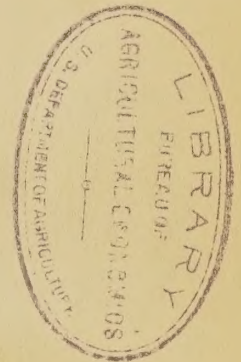o

Economic Brief with Respect to the Proposed
Milk Marketing Agreement for the
San Diego, California, Marketing Area.

by

O. H. Hoffman, Jr.,
Senior Marketing Specialist,
Dairy Section

and

E. E. Warner,
Assistant Agricultural Economist,
Dairy Section

Economic Brief with Respect to the Proposed
Milk Marketing Agreement for the
San Diego, California, Marketing Area. 1/

Introduction

The proposed marketing agreement for the San Diego
Marketing Area is intended to increase returns to producers
supplying milk to the area, in accordance with the policy of
Congress as stated in the Agricultural Adjustment Act. The
principal methods by which it is proposed to accomplish this
purpose are:

1. The classification of milk according to use.

2. The fixing of minimum prices which handlers shall
   pay for milk sold in each class.

3. The payment of uniform prices to producers selling
   to all handlers.

The economic basis for the proposed marketing agreement
is set forth in detail in the following pages.

1/ See Part IV for discussion of the marketing area.

PART I

The Economic Emergency with Respect to Milk Producers in the Area Which Supplies Milk to the San Diego, California, Marketing Area.

Normally, the entire fluid milk supply of San Diego, California, is produced in the county of San Diego, California. Considerable quantities of cream are supplied by producers located in the Imperial Valley, Imperial County, California, and in times of unusually heavy demand, in relation to supply, both cream and milk are drawn from surplus supplies in the Los Angeles production area.

From 1929 to 1933 the prices received by farmers in California for milk sold wholesale declined from $2.56 per hundredweight to $1.30 per hundredweight, or 43.3 percent. (See Table 1.) In 1934 the prices of specified dairy products were lower than in 1929 by the following percentages:

California farm price of butterfat	50.3 percent
California farm price of butter	48.2 percent
California farm price of milk sold wholesale	39.9 percent

In comparison with the above large percentage declines in the prices of dairy products, the index of prices paid by farmers for commodities bought declined to a considerably less extent, i.e. from 153 in 1929 to 109 in 1933,[2] or a decline of 28.8 percent. Moreover the index of prices paid by farmers for commodities bought increased to 123 in 1934, which was only 19.6 percent below the 1929 level, while the California farm price of milk was still 39.9 percent below the 1929 price. Thus there was a marked decline in the purchasing power of milk sold wholesale by farmers during the period 1929-1933, since the farm price of milk sold wholesale was relatively much lower than the prices paid by farmers for commodities bought, and, in 1934, the increase in the purchasing power of milk sold wholesale which might have resulted from the increase in the farm price of such milk was largely offset by the increase in prices paid by farmers for commodities bought.

Data for the year 1935 indicate a greater increase in the purchasing power of milk sold wholesale than that which occurred in 1934, but the California farm price of such milk was still 25.7 percent below

[2] This is an index which represents the United States average of prices paid by farmers for commodities bought (1909-1914 = 100).

Table 1. Average prices per hundredweight received by farmers for all milk sold wholesale in the United States and California, and the United States index of prices paid by farmers for commodities bought, by years 1929 - 1935, and by months 1935.

Year and month	Farm price of milk		United States index of prices paid by farmers for commodities bought (Aug.1909-July 1914 = 100)
	United States	California	
	Dollars	Dollars	Percent
1929	2.56	2.68	153
1930	2.30	2.48	145
1931	1.77	2.06	124
1932	1.32	1.66	107
1933	1.30	1.52	109
1934	1.53	1.61	123
1935	1.70	1.89	125
January	1.76	1.95	126
February	1.82	2.00	127
March	1.77	2.05	127
April	1.78	2.00	127
May	1.71	1.80	127
June	1.61	1.70	127
July	1.55	1.65	126
August	1.58	1.80	125
September	1.63	1.90	123
October	1.66	1.90	123
November	1.75	1.95	122
December	1.84	1.95	122

Compiled from reports of the Bureau of Agricultural Economics

the 1929 level, whereas the index of prices paid by farmers for commodities bought was only 18.3 percent below the index of such prices in 1929.

During the period 1929-1933 there was a marked decline in the gross income from milk produced on farms and in the cash farm income from dairy products sold in the United States and likewise in the State of California. In 1929 the gross income from milk produced on farms in the United States was $2,322,553,000; in 1933 it was $1,262,554,000, a decline of 45.6 percent in the four year period. In California the gross income from milk produced on farms declined 41.2 percent during this period. (See Table 2.)

The 1933 cash income from dairy products sold from farms in the United States was 46.5 percent below the cash income from this source in 1929. In California the decline in such income from 1929 to 1933 was 41.4 percent. (See Table 3.)

In California the gross income from milk produced on farms in 1934 had shown some increase but was 35.4 percent less than in 1929. Likewise the cash income from dairy products sold from farms was 35.8 percent less than in 1929.

The foregoing facts and considerations demonstrate conclusively that, in the State of California, there was a marked decline, during the period 1929-1933, in (1) the prices received by producers for milk sold wholesale, (2) the purchasing power of such milk, (3) the gross income from milk produced on farms, and (4) the cash income from dairy products sold from farms. According to available data for the years 1934 and 1935 there was only partial recovery in such prices, purchasing power and income.

Table 2. Gross Income from milk produced on farms in the United States and California, and percentage decline from 1929 in such gross income, 1929-1934.

Year	United States		California	
	Gross Income	Percent decline from 1929	Gross Income	Percent decline from 1929
	1,000 Dollars		1,000 Dollars	
1929	2,322,553	--	107,427	--
1930	2,030,853	12.6	98,714	8.1
1931	1,614,394	30.5	83,074	22.7
1932	1,260,424	45.7	69,395	35.4
1933	1,262,554	45.6	63,168	41.2
1934	1,421,253	38.8	69,398	35.4

Compiled from reports of the Bureau of Agricultural Economics, Division of Crop and Livestock Estimates.

Table 3. Cash income from all farm products and from dairy products sold from farms in the United States and California, percentage decline from 1929 in such cash income and percentage cash income from dairy products was of cash income from all farm products, 1929 – 1934.

Year	United States Cash income from all farm products	United States Percent of total cash income from farm production	California Cash income from all farm products	California Percent of total cash income from farm production	United States Cash income from dairy products sold from farms	United States Percent decline from 1929	California Cash income from dairy products sold from farms	California Percent decline from 1929
	1,000 dollars	percent	1,000 dollars	percent	1,000 dollars	percent	1,000 dollars	percent
1929	10,284,479	18.0	728,975	14.0	1,847,235	----	102,057	----
1930	7,987,606	20.2	583,924	16.1	1,615,363	12.6	93,925	8.0
1931	5,795,148	22.1	446,830	17.6	1,278,531	30.8	78,847	22.7
1932	4,368,296	22.6	360,028	18.2	985,099	46.7	65,484	35.8
1933 1/	5,402,094	18.3	408,746	14.6	988,880	46.5	59,772	41.4
1934 1/	6,261,123	17.8	488,787	13.4	1,114,016	39.7	65,497	35.8

1/ Includes benefit payments and Government purchases.
Compiled from reports of the Bureau of Agricultural Economics, Division of Crop and Livestock Estimates.

PART II

The Importance of Dairy Farming as an Agricultural Enterprise in the Area which Supplies Milk to the San Diego Marketing Area.

The importance of milk production as an agricultural enterprise in California is indicated in Table 3.

Milk production is an important agricultural enterprise in the country as a whole. In 1929 the cash income from dairy products sold from farms was 18.0 percent of the cash income from sales of all agricultural products from farms in the United States. Cash income from milk sold from farms in California during the years 1929-1934 varied from 14.0 percent to 18.2 percent of cash income from all farm products.

The fluid milk supply of San Diego is produced mainly in San Diego County, in which county dairying is an important agricultural enterprise. The county agricultural agent of San Diego County stated at the hearing held December 18, 1934, with respect to a proposed license for milk for the San Diego sales area, that the average value of total production of agricultural crops annually in San Diego County was approximately $15,000,000, and that it was estimated that between 10 and 12 percent of this income was obtained from dairy products.[3]

The San Diego Metropolitan Area is the third largest metropolitan area in the State of California, being exceeded only by the Los Angeles and San Francisco-Oakland areas.

Such being the case, activity directed toward the enhancement of prices to producers and financial returns from milk production in the area supplying milk to the San Diego Marketing Area is warranted and necessary to effectuate the policy of Congress as stated in the Agricultural Adjustment Act.

---

[3] A.A.A. Docket No. L-46, p. 66.

PART III

Comparison of the Prices Specified in the Proposed
Marketing Agreement for the San Diego Marketing Area
with Parity Prices for Milk in the San Diego Marketing Area.

Section 2 of the Agricultural Adjustment Act, as amended, states
that it is the declared policy of Congress "(1) Through the exercise of
the powers conferred upon the Secretary of Agriculture under this title,
to establish and maintain such balance between the production and con-
sumption of agricultural commodities, and such marketing conditions there-
for, as will reestablish prices to farmers at a level that will give agri-
cultural commodities a purchasing power with respect to articles that
farmers buy, equivalent to the purchasing power of agricultural commod-
ities in the base period; and, in the case of all commodities for which
the base period is the pre-war period, August 1909 to July 1914, will
also reflect current interest payments per acre on farm indebtedness
secured by real estate and tax payments per acre on farm real estate, as
contrasted with such interest payments and tax payments during the base
period. The base period in the case of all agricultural commodities
except tobacco and potatoes shall be the pre-war period, August 1909-
July 1914. In the case of tobacco and potatoes, the base period shall
be the post-war period, August 1919 - July 1929."

In section 8e of the Agricultural Adjustment Act, as amended, it
is provided that: "In connection with the making of any marketing agree-
ment or the issuance of any order, if the Secretary finds and proclaims
that, as to any commodity specified in such marketing agreement or order,
the purchasing power during the base period specified for such commodity
in section 2 of this title cannot be satisfactorily determined from
available statistics of the Department of Agriculture, the base period,
for the purposes of such marketing agreement or order, shall be the post-
war period, August 1919 - July 1929, or all that portion thereof for which
the Secretary finds and proclaims that the purchasing power of such com-
modity can be satisfactorily determined from available statistics of the
Department of Agriculture."

In the case of milk produced for sale in the San Diego Marketing
Area, available statistics in the Department of Agriculture with respect
to the August 1909-July 1914 base period are inadequate for the proper deter-
mination of the purchasing power of milk during said base period. Parity
prices for milk sold by producers to handlers in the San Diego Marketing
Area have been determined, therefore, from available statistics of the
Department of Agriculture with respect to the post-war period provided
by the Act, which statistics are for the years 1920-1928 inclusive. The
parity prices, per pound butterfat, so determined for Class I milk, are
shown in Table 4. Such prices indicate that the prices specified in the
proposed marketing agreement for the San Diego Marketing Area are within

Table 4. SAN DIEGO, CALIFORNIA: Index of prices paid by farmers for commodities bought, index of seasonal variation, actual and parity prices per pound butterfat in Class I milk, delivered f.o.b. city, average 1920-1928, by years 1930-1935, and by months, 1935 and 1936.

Year and month	Index of prices paid by farmers for commod- ities bought	Index of seasonal variation - Pacific States	Price per pound butterfat of Class I milk	
			Prices paid 1/	Parity adjusted for seasonal variation
	Percent	Percent	Cents	Cents
Average 1920-1928			101.4 2/	
1930	91.6		–	92.9
1931	78.3		91.0	79.4
1932	67.6		79.0	68.5
1933	68.9		60.0	69.9
1934	77.7		61.0	78.8
1935	79.0		65.0	80.1
January	79.6	101.6	66.0	82.0
February	80.2	101.0	67.0	82.1
March	80.2	100.4	67.0	81.6
April	80.2	99.2	67.0	80.7
May	80.2	98.0	67.0	79.7
June	80.2	97.2	66.0	79.0
July	79.6	97.8	64.0	78.9
August	79.0	99.1	64.0	79.4
September	77.7	100.4	64.0	79.1
October	77.7	101.3	64.0	79.8
November	77.1	102.0	64.0	79.7
December	77.1	102.0	64.0	79.7
1936				
January		101.6		
February		101.0		
March		100.4		
April		99.2		
May		98.0		
June		97.2		
July		97.8		
August		99.1		
September		100.4		
October		101.3		
November		102.0		
December		102.0		

1/ Prices taken from Bureau of Agricultural Economics reports.
2/ Calculated from prices appearing in the University of California, Agri. Experiment Station Bulletin 514, page 112.

the parity limit as required by the Agricultural Adjustment Act, as amended.

As of December 1935, the most recent date for which figures are available, the parity price per pound butterfat, f.o.b. city, in Class I milk, as determined for the San Diego Marketing Area, was 79.7 cents.

Part IV

The Character of the Commerce in Milk
in the San Diego Marketing Area.

The San Diego Marketing Area, as defined by the Proposed Marketing Agreement is as follows: ". . . all the territory embraced within (1) the corporate limits of the cities of San Diego, National City, Chula Vista and Coronado, and each of them, (2) the school districts of La Mesa-Spring Valley, Lemon Grove, and the city of San Diego, and each of them, (3) the unincorporated districts known as Kensington Park and Talmadge Park, and each of them, and (4) the United States Military Reservations of Point Loma and North Island, and each of them, all in the county of San Diego, State of California." (See Figure 1.) The population of the cities in the marketing area, according to the 1930 Census, was as follows:

San Diego	147,995
National City	7,301
Chula Vista	3,869
Coronado	5,425

Other territory included in the marketing area adds several thousand more population. The total population of the marketing area, however, is extremely variable due to the influx of tourists at certain seasons of the year and the frequent visits of a large part of the United States Fleet. It was stated at the hearing held December 18, 1934 with respect to the proposed milk license for the San Diego sales area 4/, that the population of the San Diego Metropolitan Area fluctuates as much as thirty to forty thousand within a year. When the Fleet is in the harbor the population of the area is increased by approximately 16,000. The number of tourists during the winter months is frequently as high as twenty to twenty-five thousand.

The proposed marketing area is the city of San Diego and contiguous urban areas which are served predominantly by dealers located in San Diego. Milk distribution by these dealers extends beyond the boundaries of the districts indicated, but in such instances the predominant source of supply is from local producer-distributors. Out of a total population of 209,659 in San Diego County, according to the 1930 Census, approximately 181,000 resided in the proposed marketing area. 5/ The 1934 estimate of the population of San Diego proper was 160,100, and of the county, 225,000. The only incorporated cities in San Diego County not included in the proposed marketing area are Escondido, population 3,421; Oceanside, population 3,508; La Mesa, population 2,513; and El Cajon, population 1,050.

The interstate movement of milk and milk products to and from the San Diego Marketing Area, is largely confined to manufactured dairy products, chiefly evaporated and condensed milk and butter. Certain distributors also supply dairy products to the population and visitors in resort towns across the international boundary in Mexico.

4/ A.A.A. Docket No. L-46, p. 54.
5/ A.A.A. Docket No. L-46, p. 46.

FIGURE 1:-SAN DIEGO, CALIFORNIA -- SALES AREA

Domestic exports of milk and other dairy products through the port of San Diego during the years 1933 and 1934 are shown in Table 5. The largest items of export in 1934 were 19,231 gallons of milk and cream, 434,288 pounds of condensed and evaporated milk, 79,620 pounds of butter, and 62,131 pounds of cheese.

The annual report of the Port Director of the Harbor Department, City of San Diego, shows that, for the fiscal year July 1, 1933 - June 30, 1934, 366 tons of evaporated milk were shipped to San Diego from other Pacific Coast ports, most of which was shipped from the port of Seattle, Washington.

The following information was supplied by the Chief Clerk of the Atchison, Topeka and Santa Fe Railroad at San Diego, taken from the records of that railroad: During the 3-month period October - December 1934, 187,730 pounds of butter, and 44,487 pounds of cheese were received at San Diego from the State of Idaho. Information has been made available from the same source to the effect that approximately forty tons of butter per month move into San Diego in less than carload lots from States other than California.

The Officer in Charge, Naval Supply Depot, San Diego, furnished the following information with respect to deliveries of milk during a recent twelve-month period:

To Naval Shore Activities - 70,513 gallons of milk

To Naval Vessels - 232,965 gallons of milk

If such milk were standardized at 3.55 percent butterfat, the total quantity of butterfat would be 92,650 pounds, which would exceed the volume of butterfat in the estimated total Class I milk in the market during any delivery period since License No. 98 became effective except that of August 16-31.

In addition to the foregoing facts and considerations which indicate the volume of milk and milk products which moves in interstate commerce, the following considerations set forth the reasons and necessity for the regulation of the commerce in milk in markets where little if any of the milk sold as fluid milk originates in other States.

A. Utilization of milk in the United States.

The milk produced in the United States if distributed among several uses, such as (1) milk for consumption as fluid milk, (2) milk for consumption as fluid cream, and (3) milk for conversion into and consumption as (a) butter, (b) cheese, (c) condensed and evaporated milk, (d) ice cream, (e) powdered milk, and (f) etc. Thus, in the year 1934, of the total

Table 5. Domestic Exports of Dairy Products from
San Diego, California, during 1933 & 1934.

	:	1933	:	1934
Milk & Cream (Fresh & Sterilized) gallons	:	6889	:	19231
Condensed Milk (Sweetened) . . . .pounds	:	2696	:	40291
Evaporated Milk (Unsweetened) . . .pounds	:	127099	:	393997
Dried whole milk. . . . . .pounds	:	--	:	115
Dried skim milk . . . . .pounds	:	945	:	430
Butter. . . . . .pounds	:	28023	:	79620
Cheese. . . . . .pounds	:	15162	:	62131
Infants foods (Malted Milk, etc.) .pounds	:	141	:	881

Compiled from "Foreign Commerce and Navigation of the United States,"
U. S. Department of Commerce, Bureau of Foreign and Domestic Commerce.

Table 6. Milk and butterfat used in factories reporting manufactured
dairy products and used by the nonfarm population as fluid
milk and cream, 1934.

Factory Product	Whole milk used 1000 pounds	Percentage of total milk used in each product
Creamery butter (including whey)	35,588,868	46.3
American cheese - whole milk and part skim	4,410,410	5.7
Cheese, other than American and cottage, pot and bakers'	1,379,720	1.8
Evaporated milk - unskimmed	3,968,765	5.2
Condensed milk - unskimmed	228,877	.3
Ice cream - factory	2,742,150	3.6
Dry or powdered cream	1,235	1/
Dry or powdered whole milk	126,952	.2
Malted Milk	35,279	1/
Gross milk equivalent of factory products	48,482,256	
Deductions for duplication resulting from recovery of butterfat from whey cream, duplication arising from the use of butter and condensed or evaporated milk in the manufacture of ice cream, and losses resulting from the fact that some fat remains in skim milk on farms, some is lost in spillage, stickage, etc., before being delivered, and some is excluded through rounding of fractional weights and tests upon delivery.	2,190,876	2/
Net whole milk equivalent based on quantities of milk and cream reported as being received for use in these products	46,291,380	60.3
Milk used by nonfarm 3/ population	30,498,997	39.7
Total milk	76,790,377	100.0

Compiled from the reports of Bureau of Agricultural Economics.

1/ Less than 1/10 of one percent.
2/ Included in individual products.
3/ The quantities of milk here shown are those indicated by reports
    from local Boards of Health and include urban farm population
    and rural nonfarm population.

volume of milk utilized in the United States for manufacturing and for consumption as milk and cream by the nonfarm population, 39.7 percent was consumed as milk and cream by the nonfarm population. Of the remaining volume of 60.3 percent, the largest part (46.3 percent) was utilized in the manufacture of creamery and whey butter. These percentage figures, as well as the volume of milk and the butterfat content of such milk utilized for consumption as milk and in specified manufactured products in 1934, are presented in Table 6.

The demand for all milk is derived from the demand for milk in different uses. Milk is distributed among the different uses noted above, and the relative volume entering the various uses fluctuates according to changes in relative prices of the finished products engendered by changing demand conditions for the various products. Any activity that tends to establish and maintain normal relationships between prices of the various products, and that tends to raise and mantain the price of butterfat in one or more of its major uses, also tends to stabilize prices received by producers for milk in all uses.

B. Production of specified dairy products in major producing States.

The milk utilized in the manner indicated in the foregoing table is produced and processed in highly concentrated producing areas. This fact becomes evident upon consideration of the volume of production of specified manufactured products which is produced in major producing States.

Table 7 indicates the volume of creamery butter that was produced in four leading butter-producing States in 1933 and 1934, and the percentage that such production was of total production in the United States. That a high degree of localization exists in the butter manufacturing industry is indicated by the fact that during each of the years 1933 and 1934, the four States, namely, Iowa, Minnesota, Nebraska and Wisconsin produced only slightly less than half, 44.8 percent and 45.3 percent, respectively, of all creamery butter manufactured in the United States. The production of cheese is likewise highly concentrated, but to an even greater extent than creamery butter. As indicated in Table 8, Wisconsin and New York produced over 60 percent of all cheese manufactured in the United States in 1933 and 1934. Similarly, as shown in Table 9, during the same years about 70 percent of the evaporated milk manufactured in the United States was produced in five States, namely, Wisconsin, New York, California, Illinois, and Ohio.

Manufactured dairy products, to a less extent cream, and to a still less extent fluid milk, are readily storable and transportable. In the case of cream and manufactured products, this factor of storability and transportability is reflected in the free flow of these products between markets, whereas high transportation costs, engendered by the bulk and perishability of fluid milk, render it uneconomical to transport fluid milk long distances. The free flow of these products between markets results in inter-market price relationships of such nature that the prices of these products tend to vary between markets only by the amount of transportation costs from one market to the next, plus the necessary additional handling charges other than transportation. In addition to the foregoing, a considerable volume

Table 7. Production of creamery butter in specified States and in the United States, 1933 and 1934.

State	Production		Percentage of U. S. Total	
	1933	1934	1933	1934
	1,000 lbs.	1,000 lbs.	Percent	Percent
Iowa	239,125	238,313	13.6	14.1
Minnesota	299,872	275,786	17.0	16.3
Nebraska	93,361	91,384	5.3	5.4
Wisconsin	157,933	161,942	9.0	9.6
Total four States	790,291	767,425	44.8	45.3
United States	1762,688	1,694,708	100.0	100.0

Compiled from reports of the Bureau of Agricultural Economics, Division of Dairy and Poultry Products.

Table 8. Production of cheese in specified States and in the United States, 1933 and 1934.

State	Production		Percentage of U. S. Total	
	1933	1934	1933	1934
	1,000 lbs.	1,000 lbs.	Percent	Percent
Wisconsin	323,028	342,357	50.1	50.2
New York	77,537	79,833	12.0	11.7
Total two States	400,565	422,190	62.1	61.9
United States	644,589	682,317	100.0	100.0

Compiled from reports of the Bureau of Agricultural Economics, Division of Dairy and Poultry Products.

Table 9. Production of evaporated milk in specified States and in the United States, 1933 and 1934.

State	Production		Percentage of U. S. Total	
	1933	1934	1933	1934
	1,000 lbs.	1,000 lbs.	Percent	Percent
Wisconsin	696,296	693,240	40.6	40.5
New York	91,959	80,784	5.4	4.7
California	217,524	191,902	12.7	11.2
Illinois	109,762	110,481	6.4	6.5
Ohio	84,548	116,578	4.9	6.8
Total five States	1200,089	1,192,985	70.0	69.7
United States	1716,700	1,711,570	100.0	100.0

Compiled from reports of the Bureau of Agricultural Economics, Division of Dairy and Poultry Products.

of dairy products, chiefly evaporated milk, is exported from the United States yearly, and a rather large volume of cheese, especially Swiss and Italian varieties, is imported yearly.

The above generalizations are substantiated by a consideration of the (1) receipts of milk, cream, butter and other dairy products at specified markets, and (2) between prices in different markets.

C. Receipts of specified dairy products at the principal markets.

In Tables 10-12 inclusive are shown the receipts of milk and cream at New York City, Philadelphia, and Boston in 1934 and 1935. As indicated from these tables, the cream supply for each of the above-named markets originated in a number of different States; thus, for the year 1935, the cream supply of Chicago was drawn from 13 States, (see Table 13), with shipments from as far east as Ohio, west as far as Kansas, and south as far as Oklahoma and Tennessee. New York City received cream from 14 States in 1935; Boston received cream from 16 States, and Philadelphia from 15 States. In contrast with the receipts of cream in these markets from rather extensive areas, however, an inspection of the receipts of milk in these markets reveals that the latter originates in more restricted and generally more adjacent areas to the principal market: In 1935, receipts of milk at New York originated in 8 States, at Boston from 6 States and at Philadelphia from 7 States.

Tables 14 and 15 indicate the receipts of butter and cheese, respectively, in each of the four above-named markets. The tables are self-explanatory, and clearly point out both the extent and the magnitude of the commerce in these products.

D. Exports and imports of dairy products.

The foreign trade in dairy products of the United States has never approached the significance of the domestic trade in these products. Particularly has this been true since 1929. Suffice it to say, however, that an appreciable volume of manufactured dairy products was exported from the United States during the years ended June 30, 1934 and June 30, 1935. (See Tables 16 - 19 inclusive.) A substantial quantity of butter, together with various types of foreign cheese, were imported in the same years. (See Tables 20 and 21.)

E. Intermarket price relationships.

The free flow of manufactured dairy products between different markets in response to price changes engendered by changing supply and demand conditions results in decidedly close correlation between the prices of dairy products in different markets. The relationship between the wholesale price of 92 score butter at New York City and Chicago, Illinois, is shown in Figure 4. If the wholesale price of 92 score butter at New York should become so high relative to the wholesale price of 92 score butter at Chicago that shippers of butter could make a greater profit by shipping their butter to New York than to Chicago, they would do so, increasing supplies on the

Table 10. Receipts of milk and cream at New York City and Metropolitan
Area, by States of origin, 1934 and 1935.

| State | Receipts | | | |
| | Milk | | Cream | |
	1934	1935	1934	1935
	40 quart units	40 quart units	40 quart units	40 quart units
Connecticut	202,383	227,765	5,702	5,282
Delaware	41,706	33,796	983	570
Indiana	216	---	10,402	14,885
Maryland	153,223	163,735	450	---
Massachusetts	145,451	143,999	1,771	2,888
Michigan	---	---	200	3,725
Missouri	---	---	---	203
New Jersey	3,438,275	3,757,332	25,904	25,978
New York	20,865,653	20,173,018	1,172,651	1,122,993
Ohio	1,127	---	26,772	33,408
Pennsylvania	5,485,943	6,004,092	176,691	159,078
Tennessee	---	---	---	1,461
Texas	---	---	---	200
Vermont	1,228,945	1,459,959	90,897	68,328
Wisconsin	---	---	6,150	11,949
Total	31,562,922	31,963,696	1,518,573	1,450,948

Compiled from reports of the Bureau of Agricultural Economics,
Division of Dairy and Poultry Products.

Table 11. Receipts of milk and cream at Boston and Metropolitan Area,
by States of origin, 1934 and 1935.

State	Receipts			
	Milk		Cream	
	1934	1935	1934	1935
	40 quart units	40 quart units	40 quart units	40 quart units
Alabama	---	---	200	---
Illinois	---	---	1,400	1,000
Indiana	---	---	7,731	3,800
Kansas	---	---	2,000	800
Maine	688,063	692,245	45,365	48,326
Maryland	---	---	400	200
Massachusetts	530,629	718,132	2,202	2,248
Michigan	---	---	50,915	61,981
Minnesota	---	---	9,299	7,410
Missouri	---	---	13,884	10,816
New Hampshire	765,003	709,664	19,949	22,148
New York	341,497	430,309	66,808	26,586
Ohio	---	---	14,160	8,000
Pennsylvania	---	---	360	---
Rhode Island	12,949	37,121	1	6,450
Tennessee	---	---	22,449	6,829
Vermont	3,415,786	3,124,723	272,806	316,489
Wisconsin	---	---	56,335	31,527
Total	5,753,927	5,712,194	586,264	554,610

Compiled from reports of the Bureau of Agricultural Economics,
Division of Dairy and Poultry Products.

Table 12. Receipts of milk and cream at Philadelphia and
Metropolitan Area, by States of Origin, 1934 and 1935.

State	Milk		Cream	
	1934	1935	1934	1935
	40 Qt. Units	40 Qt. Units	40 Qt. Units	40 Qt. Units
Delaware	451,705	448,215	2,556	902
District of Columbia	-	-	690	75
Illinois	-	-	1,821	2,210
Indiana	-	-	20,538	40,606
Kentucky	-	-	-	200
Maryland	849,866	868,421	20,634	28,163
Michigan	-	-	600	12,125
Minnesota	-	-	1,990	5,856
Missouri	-	-	3,506	4,350
New Jersey	595,528	629,571	260	-
New York	-	100	17,902	3,502
Ohio	-	-	9,257	10,999
Pennsylvania	5,078,585	5,089,114	104,757	55,540
Tennessee	-	-	-	200
Virginia	-	-	246	-
West Virginia	23,084	29,185	1,385	920
Wisconsin	-	1,392	76,470	65,058
Total	6,998,768	7,065,998	262,012	230,706

Compiled from reports of the Bureau of Agricultural Economics,
Division of Dairy and Poultry Products.

Table 13.   Receipts of cream at Chicago and Metropolitan Area,
           by States of origin, 1934 and 1935.

State	Receipts of Cream	
	1934	1935
	40 Qt. Units	40 Qt. Units
Arkansas	8,198	12,233
Illinois	179,931	183,070
Indiana	20,978	22,801
Iowa	7,792	7,684
Kansas	163	40
Kentucky	10,196	23,117
Michigan	2,419	776
Minnesota	310	-
Mississippi	1	1,677
Missouri	29,748	38,799
Ohio	6,175	3,655
Oklahoma	245	515
Pennsylvania	25	-
Tennessee	1,394	5,296
Wisconsin	259,647	285,130
Total	527,222	585,130

Compiled from reports of the Bureau of Agricultural Economics,
       Division of Dairy and Poultry Products.

Table 14. Receipts of butter (gross pounds) at four principal markets, 1935.

State	New York	Chicago	Philadelphia	Boston
	Pounds	Pounds	Pounds	Pounds
Alabama	18,000			
Arkansas	1,581	1,745,762		
California	35,576			
Colorado	19,814	246,006		142,400
Connecticut	116			20,400
Delaware				50
Dist. of Columbia	357		14	
Florida	28			
Idaho	46,738	20,351	21,150	
Illinois	25,279,726	16,429,261	8,827,268	18,803,907
Indiana	5,072,989	4,714,134	2,037,134	3,175,276
Iowa	72,660,736	37,946,806	8,887,878	11,530,146
Kansas	7,291,268	16,323,214	628,980	1,675,309
Kentucky	1,349,609	507,540	488,891	467,258
Louisiana	103,041	1,817		
Maine				1,855
Maryland	25,151		384,912	
Massachusetts	141,382			129,034
Michigan	6,684,115	4,707,752	157,367	798,419
Minnesota	58,883,803	28,069,983	41,243,052	22,242,059
Mississippi	153,732	52,805	71,646	427,996
Missouri	5,050,912	20,089,969	2,314,723	2,162,231
Montana		204		26,752
Nebraska	26,625,586	11,088,952	5,369,591	3,327,077
New Hampshire				433
New Jersey	29,932		22,625	457,286
New Mexico		962		
New York	3,261,226	23,162	3,922,991	799,436
North Carolina			23,302	
North Dakota	3,195,283	3,760,833	796,041	4,124,645
Ohio	5,781,932	40,323	656,450	3,240,161
Oklahoma	447,286	8,018,565	153,530	2,599,380
Oregon	114,454			
Pennsylvania	974,942	8,801	179,149	
South Carolina	61			
South Dakota	1,067,646	11,461,553	338,315	2,120,218
Tennessee	502,819	192,543	380,597	226,956
Texas	354,640	1,029,643	397,912	45,292
Utah	20,010			
Vermont				164,197
Virginia	1,394,236		1,017,108	
Washington		7,300		23,955
West Virginia	246,405		12,747	
Wisconsin	10,960,606	63,041,929	5,174,665	3,691,885
Wyoming		1,825		
Canada	125,632			
Total	237,921,370	229,621,995	83,508,038	82,424,013

Compiled from reports of the Bureau of Agricultural Economics, Division of
Dairy and Poultry Products.

Table 15. Receipts of cheese (gross pounds) at four principal markets,
by states of origin, 1935.

S t a t e	New York	Chicago	Philadelphia	Boston	Total Four Markets
	Pounds	Pounds	Pounds	Pounds	Pounds
California	82,656	3,892	849	275	87,672
Colorado	5,586	55,474			61,060
Connecticut	101			3,419	3,520
Delaware	15				15
Florida	1,565				1,565
Idaho		35,371			35,371
Illinois	8,549,663	5,432,173	4,670,142	613,050	19,265,028
Indiana	1,255,173	1,553,774	152,630	60,123	3,021,700
Iowa	65,481	57,679	3,631	9,800	136,591
Kansas	14	305			319
Kentucky	52,990				52,990
Maine				50	50
Maryland	232				232
Massachusetts	34,850	26,798	2,975	1,401	66,024
Michigan	834,009	76,452	114,648	86,286	1,111,395
Minnesota	161,473	18,608	195,955	226,210	602,246
Missouri	362,666	565		2,116	365,347
Nebraska		4,636			4,636
New Jersey	24,135	253,573		97,638	375,346
New York	3,793,488	2,492,863	621,257	2,249,078	9,156,686
North Carolina	30				30
North Dakota		413			413
Ohio	943,842	12,827	164,207	81,644	1,202,520
Oregon	86				86
Pennsylvania	21,664	42,947	6,805	10,808	82,224
Rhode Island	28				28
South Dakota		125		20,590	20,715
Tennessee	424	2,830			3,254
Texas	81	3,348			3,429
Utah	124	125			249
Vermont	227,397			70,417	297,814
Virginia	120			100	220
Washington	536				536
West Virginia	297				297
Wisconsin	50,354,259	23,829,545	21,633,062	18,414,122	114,230,988
Dist. of Col.	210				210
Canada	26,978			160	27,138
Total	66,800,173	33,904,323	27,566,161	21,947,287	150,217,944

Compiled from reports of the Bureau of Agricultural Economics, Division of Dairy
and Poultry Products.

Table 16. Domestic exports of butter, from the United States,
by Countries of destination, for the years ending
June 30, 1934 and June 30, 1935.

Country	Domestic Exports	
	1934 1/	1935 2/
	1,000 pounds	1,000 pounds
United Kingdom	Less than 500	Less than 500
Honduras	72	31
Panama	206	64
Mexico	161	171
Cuba	1	2
Haiti, Republic of	208	75
Other West Indies 3/	186	116
Columbia	18	3
Peru	8	-
Venezuela	38	35
Philippine Islands	383	97
Other Countries	135	167
Total	1,416	761

1/ Compiled from monthly summaries of foreign commerce, Bureau of
Agricultural Economics, Foreign Agricultural Service.
2/ Compiled from reports of the Bureau of Agricultural Economics,
Division of Dairy and Poultry Products.
3/ Excludes Bermudas.

Table 17. Domestic exports of cheese from the United States,
by Countries of destination, for the years ending
June 30, 1934, and June 30, 1935.

Country	Domestic Exports	
	1934 1/	1935 2/
	1,000 pounds	1,000 pounds
Panama	505	504
Mexico	108	142
Canada	66	83
Honduras	31	15
British Honduras	12	1
Cuba	59	78
Virgin Islands	65	34
Haiti, Republic of	26	27
Other West Indies 3/	28	10
China	110	-
Philippine Islands	89	170
Other Countries	154	280
Total	1,253	1,344

1/ Compiled from monthly summaries of foreign commerce, Bureau of
    Agricultural Economics, Foreign Agricultural Service.
2/ Compiled from reports of the Bureau of Agricultural Economics,
    Division of Dairy and Poultry Products.
3/ Excludes Bermudas.

Table 18. Domestic exports of condensed milk during the years
ending June 30, 1934, and June 30, 1935, by countries
of destination.

Country	Domestic Exports	
	1934 1/	1935 2/
	1,000 pounds	1,000 pounds
Total Europe	5	14
Cuba	3	3
Philippine Islands	2,625	5,049
Japan	Less than 500	-
Hong Kong	1	189
China	12	65
Mexico	219	205
Jamaica	1,077	845
Honduras	261	278
Costa Rica	115	86
Venezuela	133	88
Other Countries	724	1,059
Total	5,175	7,881

1/ Compiled from the Yearbook of Agriculture, 1935.

2/ Compiled from monthly summaries of foreign commerce, Bureau
of Agricultural Economics, Foreign Agricultural Service.

Table 19. Domestic exports of evaporated milk from the United States
by countries of destination, for the years ending June 30,
1934, and June 30, 1935.

Country	Domestic Exports	
	1934 1/	1935 2/
	1,000 lbs.	1,000 lbs.
United Kingdom	1,038	457
Other Europe	72	-
Total Europe	1,110	457
Philippine Islands	16,920	22,125
Panama	4,597	4,252
Peru	830	1,528
China	747	875
British Malaya	526	896
Cuba	287	243
Japan	196	-
Mexico	907	1,114
Netherland West Indies	1,033	1,413
Netherland East Indies	818	771
Siam	1,848	1,833
Newfoundland & Labrador	561	-
Other Countries	2,533	4,082
Total	32,913	39,589

1/ Compiled from the Yearbook of Agriculture, 1935.

2/ Compiled from monthly summaries of foreign commerce, Bureau of
Agricultural Economics, Foreign Agricultural Service.

Table 20. Imports of butter into the United States, by
countries of origin, for the years ended
June 30, 1934, and June 30, 1935.

C o u n t r y	I m p o r t s	
	1 9 3 4 1/	1 9 3 5 2/
	1,000 pounds	1,000 pounds
United Kingdom	60	3,784
Denmark	193	2,166
Other Europe	121	7,985
Total	374	13,935
New Zealand	330	7,183
Canada	47	98
Other Countries	12	1,177
Total	763	22,393

1/ Compiled from the Yearbook of Agriculture, 1935.

2/ Compiled from monthly summaries of foreign commerce, Bureau
of Agricultural Economics, Foreign Agricultural Service.

Table 21. Imports of cheese into the United States,
by countries of origin, for the years
ended June 30, 1934 and June 30, 1935.

Country	Imports	
	1934 1/	1935 2/
	1,000 pounds	1,000 pounds
Cheese, Emmenthaler (Swiss)		
Switzerland	6,005	5,275
Denmark	566	587
Germany	204	69
Other countries	1,213	803
Total	7,988	6,734
Cheese other than Swiss		
Italy	26,083	27,260
France	3,079	3,406
Netherlands	1,709	1,913
Switzerland	1,236	1,237
Other Europe	4,618	5,095
Total Europe	36,725	38,911
Canada	1,165	1,165
Other countries	1,027	1,636
Total	38,917	41,712

1/ Compiled from the Yearbook of Agriculture, 1935.
2/ Compiled from monthly summaries of foreign commerce, Bureau of
Agricultural Economics, Foreign Agricultural Service.

New York City market and thereby tending to reduce prices in New York City relative to prices in Chicago, and vice-versa if the wholesale price of 92 score butter at Chicago should become such that it were more profitable to ship butter to Chicago rather than New York City.

In addition to the above intermarket price relationships, the supply of the raw material, butterfat, is interchangeable between products, so that the prices received by producers of butterfat in all uses tend to be markedly inter-related. These producer price inter-relationships are due to the fact that farmers can and do shift their disposal of butterfat from one use to another as price conditions warrant, thereby tending to keep the farm price of butterfat in any one of the several uses closely associated with the farm price of butter-fat in all other uses.

The above generalization is substantiated by a consideration of the relationships between (1) the index of the United States average farm price of butterfat and the index of the United States farm price of milk sold at whole-sale (such indices are the percentage each yearly price is of the 1910-1914 average of the yearly average prices, or in other words, the 1910-1914 average of the yearly average prices = 100), (2) the index of the United States average farm price of butterfat and the index of the United States average farm price of butter (in both cases the 1910-1914 average of the yearly average prices = 100), (3) the average monthly farm prices of butterfat in the United States and the average monthly wholesale prices of 92 score butter at New York City and Chicago, and (4) the United States farm price of butterfat and the prices paid producers for milk at condenseries, such milk being utilized in the manufacture of condensed and evaporated milk.

The relationships noted in (1), (2), (3) and (4) above are depicted graphically in figures 2, 3, 4 and 5 to 12 respectively (figures 5 to 12 depicting the relationship between the United States average farm price of butter-fat and the price paid producers at condenseries (processing plants engaged in the manufacture of condensed and evaporated milk) by geographical divisions. The marked relationships noted above obtain because of the interchangeability of the supply of the raw material, butterfat, and substantiate the contention that any regulation that tends to stabilize and raise the price of butterfat in any one of the major products in which butterfat is utilized, also tends to stabilize and raise the price of butterfat in all uses.

The prices received by producers for milk used for consumption as fluid milk are also closely related to the prices received by producers for butterfat used in the production of manufactured dairy products. These close relationships arise from the fact that it is impossible to forecast accurately the daily requirements of fluid milk in any milk market, so that milk intended for fluid distribution finds its way into manufactured products; and the fact that the price relationships between fluid milk and milk for manufacturing purposes indicate that the interchangeability of supply of milk for fluid distribution and of milk for manufacturing purposes is of such nature that fluid milk prices in any given area are subject to the same supply and demand forces on a national scale as those to which manufactured products are subject.

The demand for fluid milk in any given market varies markedly from day to day. So important is this factor that producers must supply a quantity at least 15 percent in excess of the average daily consumption in the market, a

margin of safety, in order to meet unpredictable daily variation in demand. In addition, in most milk markets an amount in excess of the daily sales plus the margin of safety is usually produced and brought to the distributor's plant. This milk is collected from the farmer and is combined and processed in the distributor's plant, so that the milk of any producer so handled is indistinguishable from that of any other producer. In addition, it is impossible to determine at this point what portion of the milk in the distributor's plant will finally be consumed as fluid milk in that market, or what portion of the milk will be converted into manufactured dairy products and perhaps sold in distant markets. It is quite common for distributors to have "route returns", that is, milk that is bottled for fluid distribution, is taken out on the delivery route, and, finding no market, is utilized in manufactured dairy products.

The above generalizations are substantiated by intermarket price relationships, and by the relationships between prices of fluid milk and milk for manufacturing purposes. If fluid milk prices in any given market were not affected by the prices of milk in other distant markets and by the price of butterfat in all other uses, and did not in turn affect the price of milk and butterfat in other distant markets and in other uses, there would be little reason to expect a close relationship between the prices received by producers of fluid milk and those received by producers of milk for manufacturing purposes.

However, the prices received by producers for fluid milk testing 3.5 percent butterfat used for fluid consumption are closely related to the United States average farm price of butterfat. These relationships are not restricted to a country-wide consideration; the prices received by producers in every market area, whether surplus or deficit, bear these marked relationships to the United States average farm price of butterfat. Since it was demonstrated in the foregoing pages that the prices received by producers for butterfat entering into specific uses are closely related to the United States average farm price of butterfat, it follows that the prices received by producers for milk used for fluid consumption are closely associated with the prices received by producers for butterfat entering all other uses.

The relationships noted above are graphically depicted in figures 13 to 22, inclusive, which show the relationship between the United States average farm price of butterfat and the prices paid producers for 3.5 percent milk used for fluid consumption in the markets of Hartford, Connecticut; New York City, New York; Boston, Massachusetts; Washington, D. C.; Los Angeles, California; Baltimore, Maryland; Seattle, Washington; Richmond, Virginia; Milwaukee, Wisconsin; and Louisville, Kentucky.

The relationships noted above obtain because farmers will, over a period of time, shift their method of disposal of the milk they produce as price conditions warrant. If an adequate supply of fluid milk is to be assured in any given market, the prices received by producers must be sufficient, over a period of time, to cover the additional costs incurred in the production of high quality milk for consumption as fluid milk. On the other hand, the existence of abnormal differentials between the price of fluid milk and milk for manufacturing purposes will cause producers to shift their marketing in the direction of the more favorable prices, continuing the process until normal price relationships are restored.

FIGURE 2:-RELATION BETWEEN INDEX OF U. S. FARM PRICE OF BUTTERFAT AND INDEX OF U. S. FARM PRICE OF MILK WHOLESALE, 1910-1935.
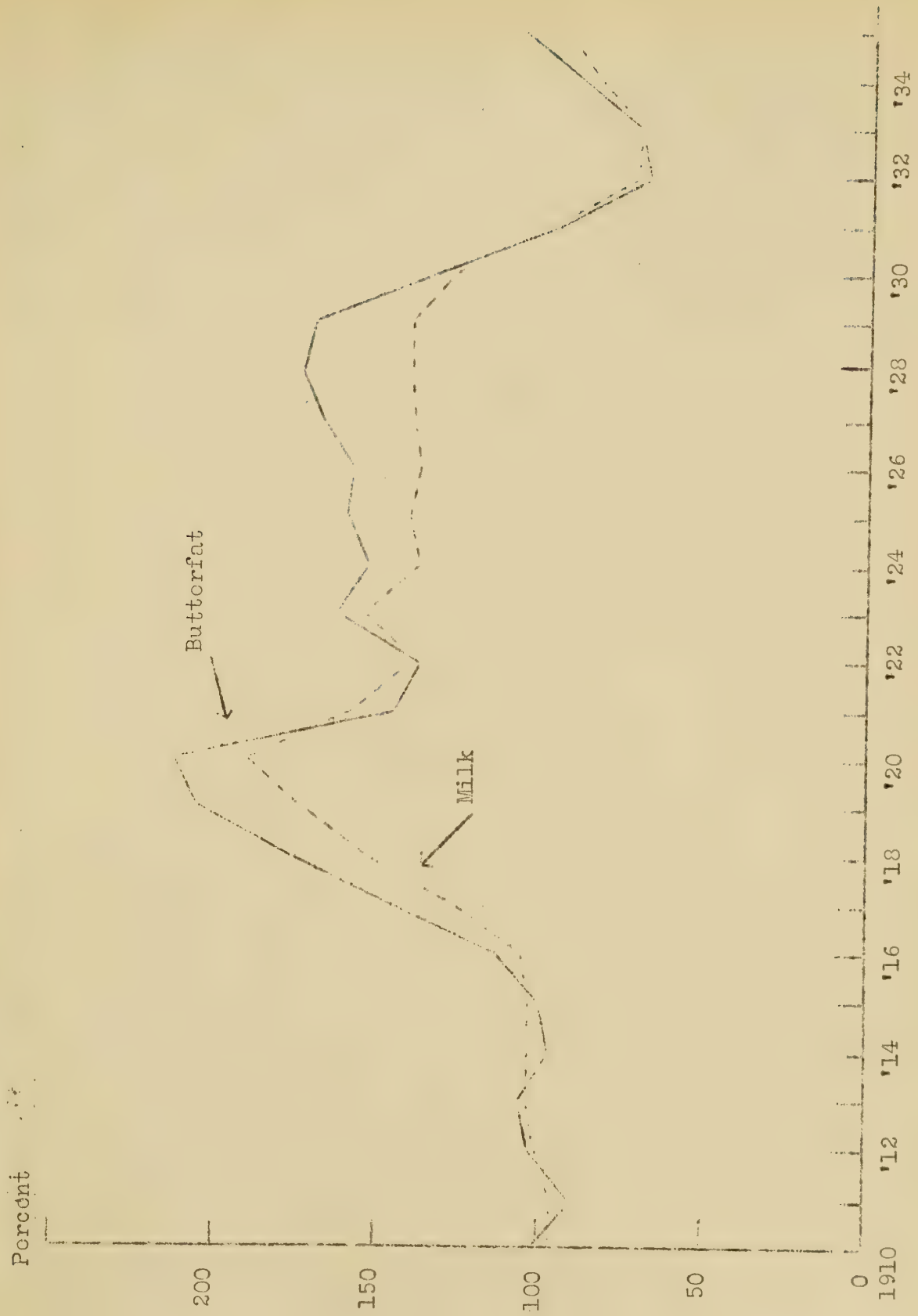
FIGURE 3:-RELATION BETWEEN INDEX OF U. S. FARM PRICE OF BUTTER AND INDEX OF U. S. FARM PRICE OF BUTTERFAT, 1910-1935.
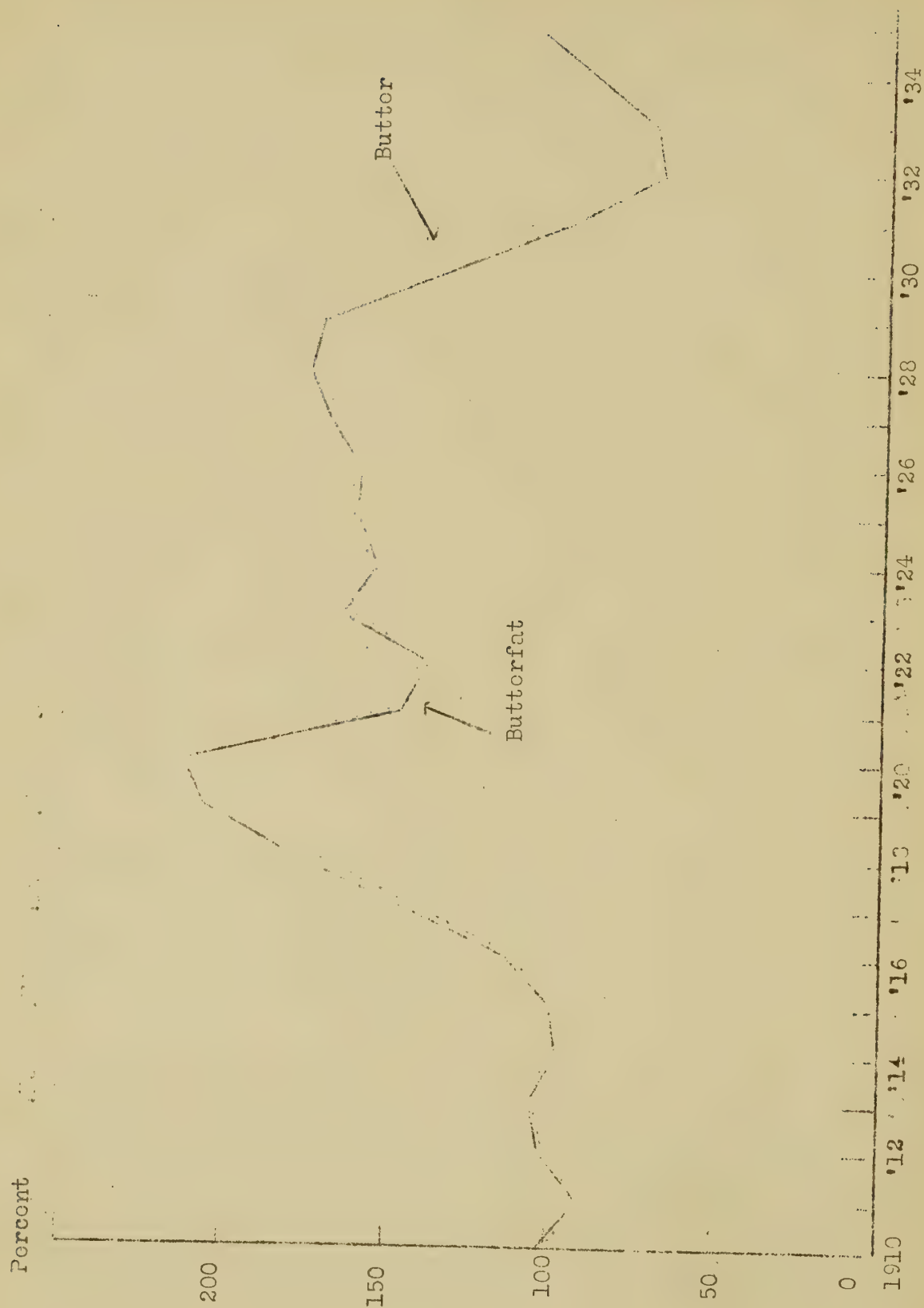
FIGURE 4:- AVERAGE PRICES OF BUTTERFAT IN THE U. S. AND AVERAGE WHOLESALE PRICES
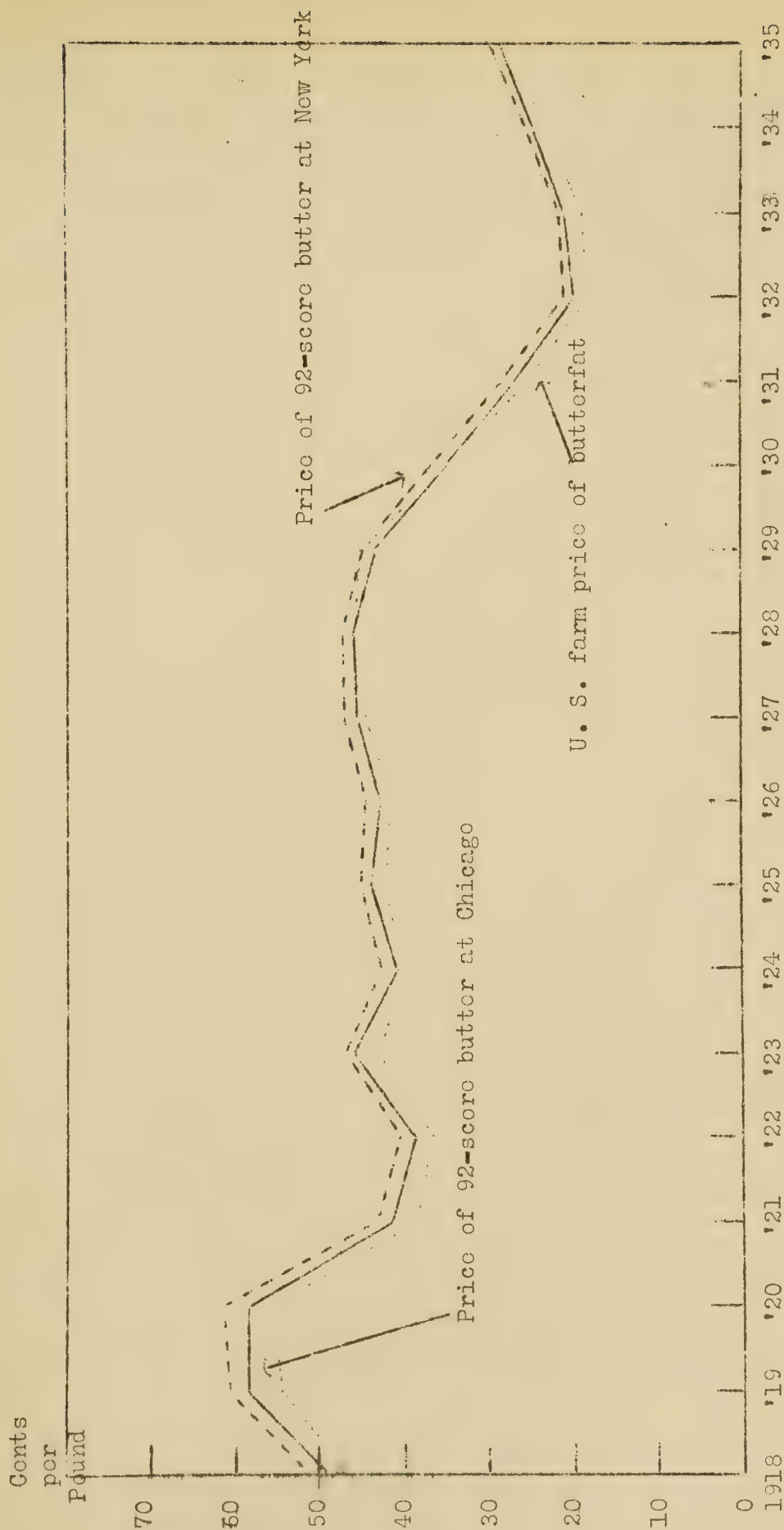OF 92-SCORE BUTTER IN NEW YORK AND CHICAGO, 1918-1935.

FIGURE 5:—RELATION BETWEEN U. S. FARM PRICE PER POUND OF BUTTERFAT AND PRICES PAID TO PRODUCERS FOR 3.5 PERCENT MILK PER CWT. DELIVERED AT CONDENSERIES IN THE U. S., 1922-1935
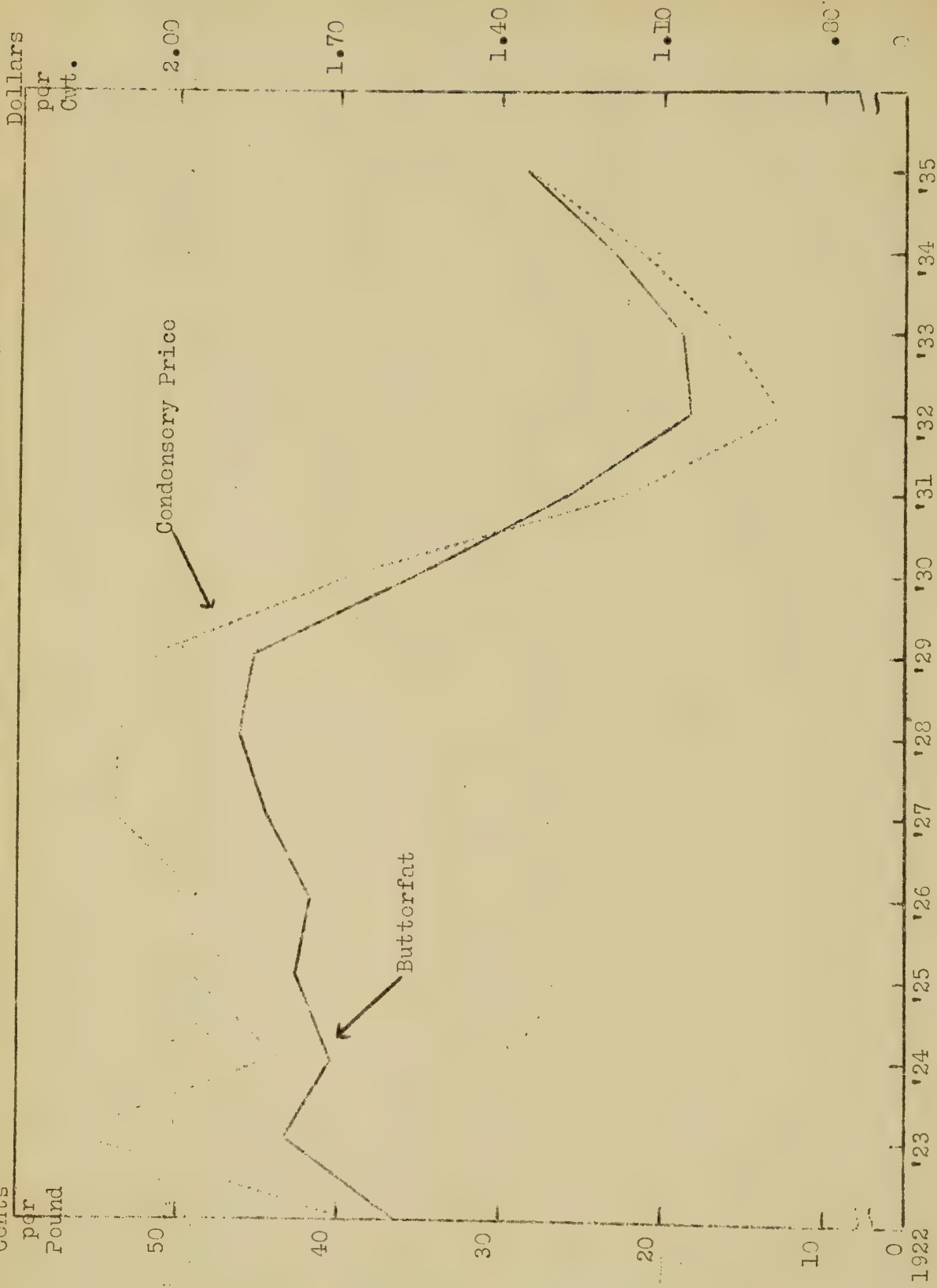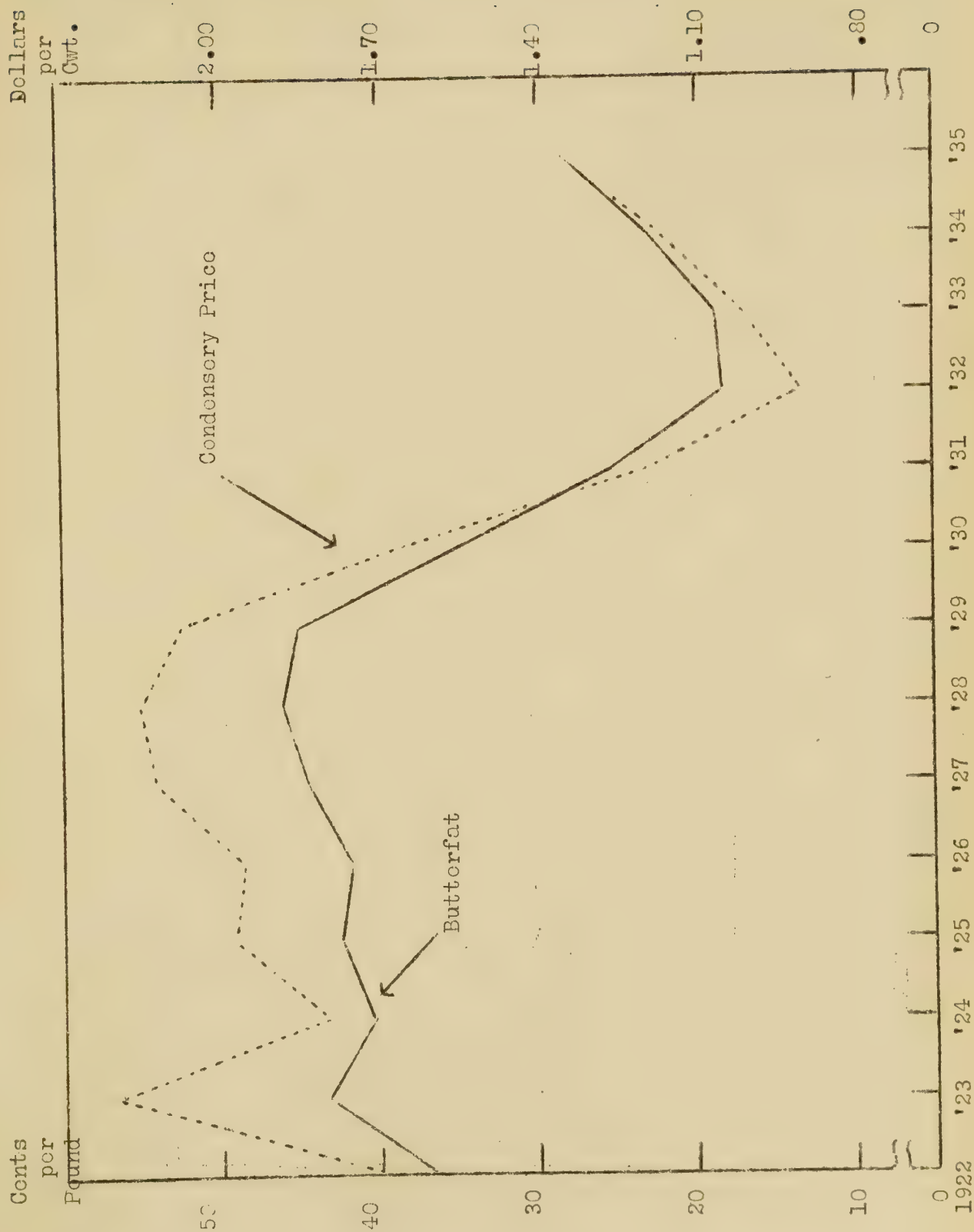
FIGURE 6:-RELATION BETWEEN U. S. FARM PRICE PER POUND OF BUTTERFAT AND
PRICES PAID TO PRODUCERS FOR 3.5 PERCENT MILK PER CWT.
DELIVERED AT CONDENSERIES IN THE MIDDLE ATLANTIC
STATES SECTION, 1922-1935.
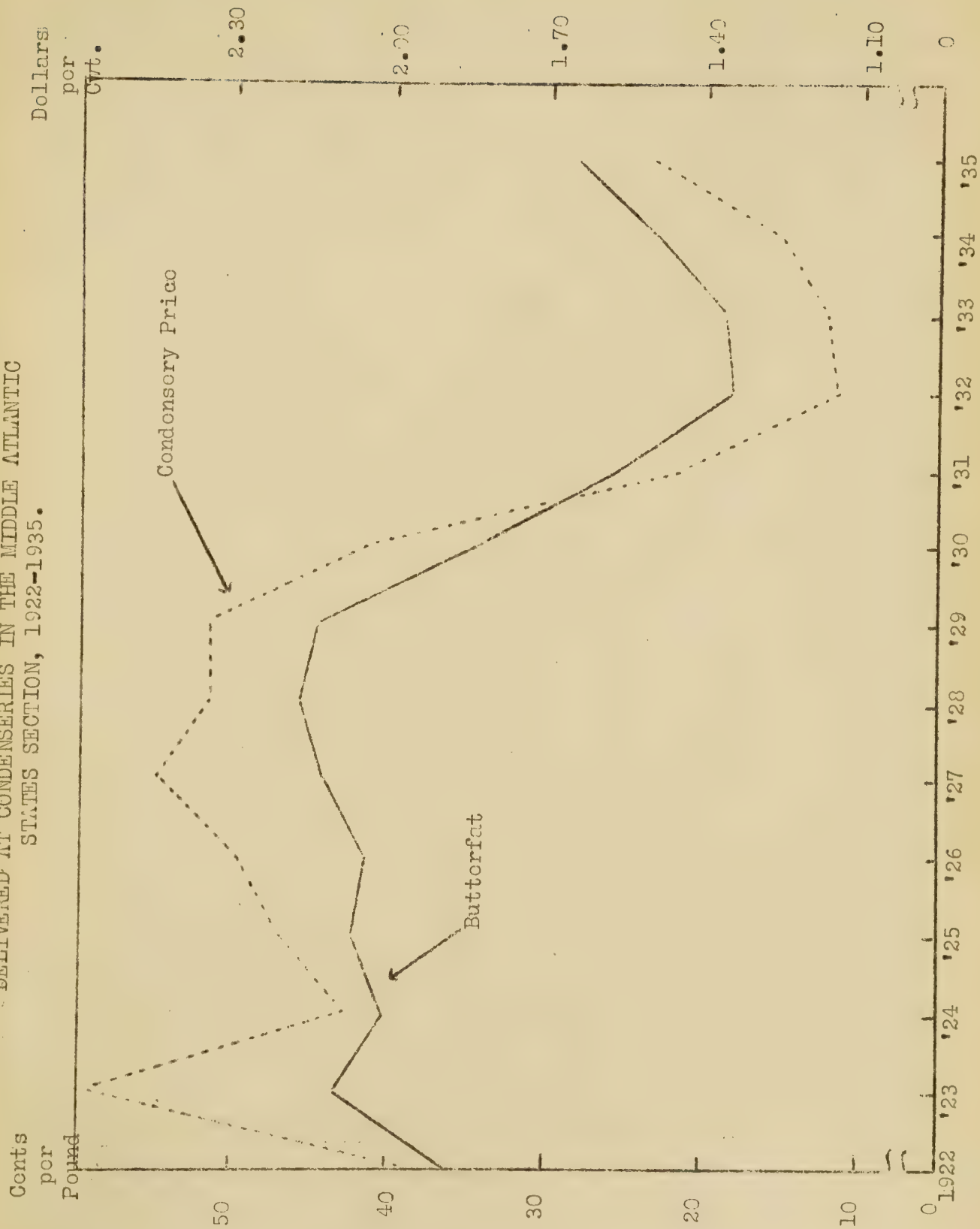
FIGURE 7:—RELATION BETWEEN U. S. FARM PRICE PER POUND OF BUTTERFAT AND
PRICES PAID TO PRODUCERS FOR 3.5 PERCENT MILK PER CWT.
DELIVERED AT CONDENSERIES IN SOUTH ATLANTIC STATES
1922-1935
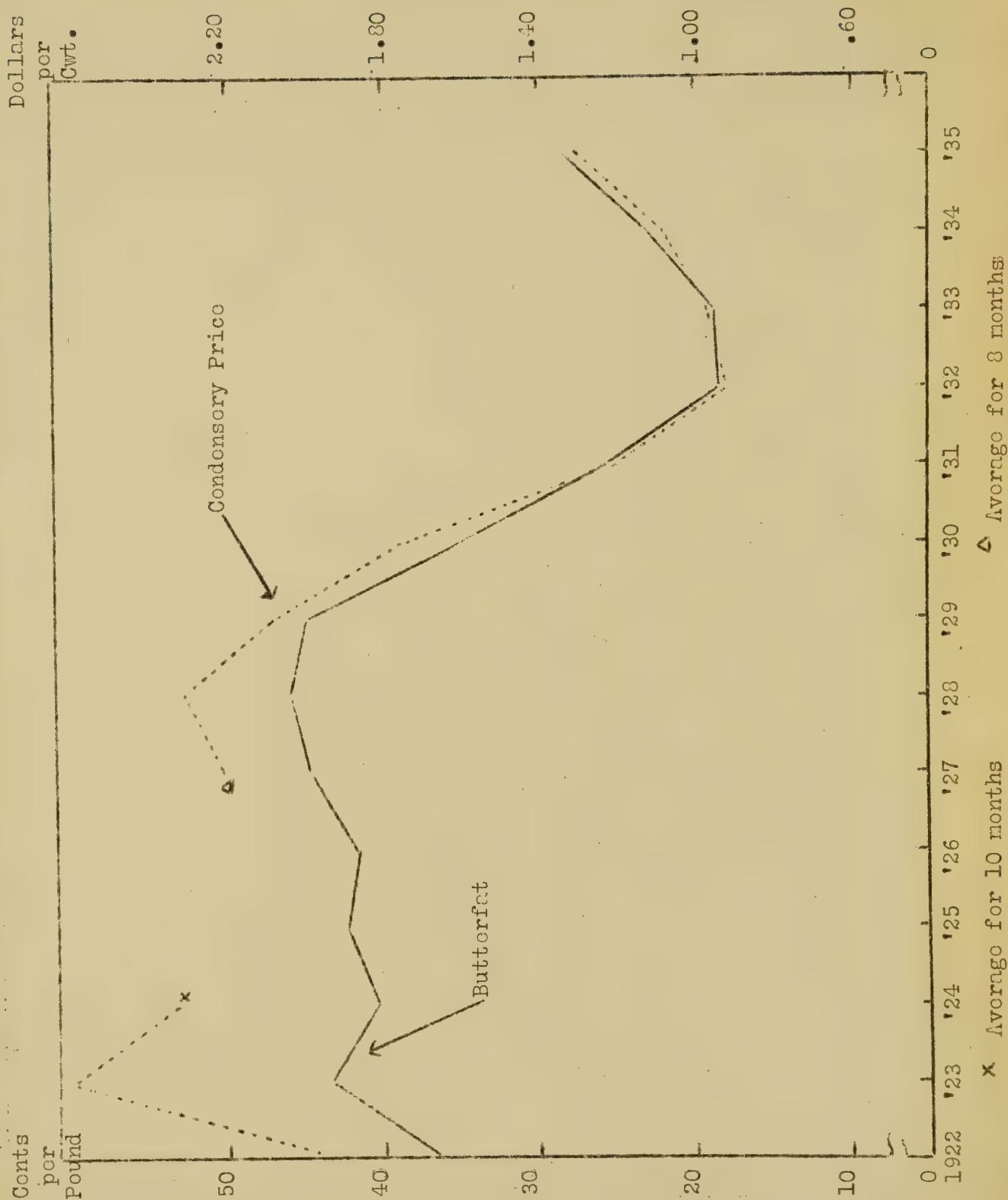
FIGURE 3:-RELATION BETWEEN U. S. FARM PRICE PER POUND OF BUTTERFAT AND PRICES PAID TO PRODUCERS FOR 3.5 PERCENT MILK PER CWT. DELIVERED AT CONDENSERIES IN EAST NORTH CENTRAL SECTION, 1922-1935.
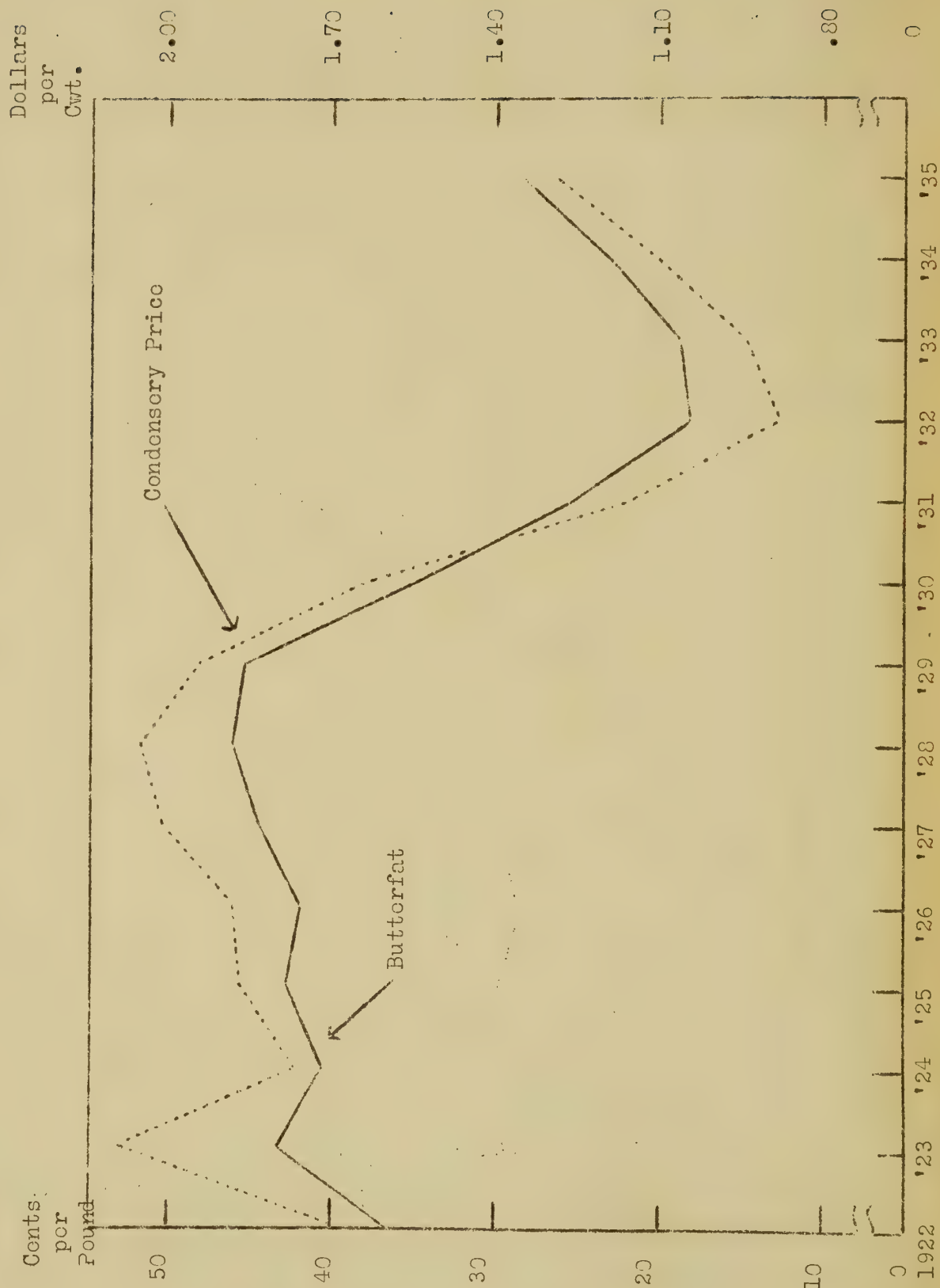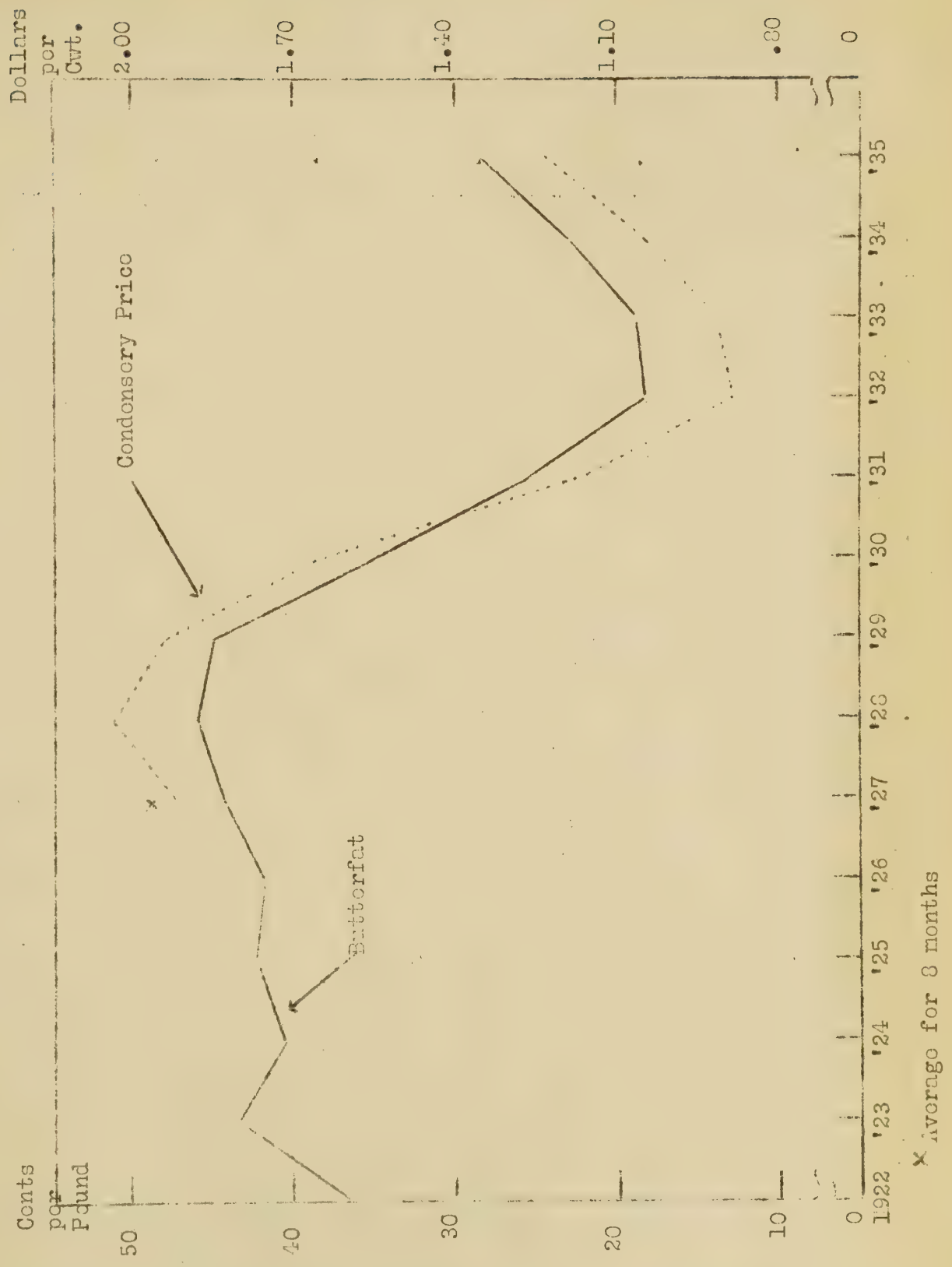
FIGURE 9:-RELATION BETWEEN U. S. FARM PRICE PER POUND OF BUTTERFAT AND PRICES
PAID TO PRODUCERS FOR 3.5 PERCENT MILK PER CWT. DELIVERED AT
CONDENSERIES IN WEST NORTH CENTRAL SECTION, 1922-1935.

FIGURE 10:-RELATION BETWEEN U.S. FARM PRICE PER POUND OF BUTTERFAT AND PRICES
PAID TO PRODUCERS FOR 3.5 PERCENT MILK PER CWT. DELIVERED
AT CONDENSERIES IN SOUTH CENTRAL SECTION, 1922-1935.

FIGURE 11:-RELATION BETWEEN U. S. FARM PRICE PER POUND OF BUTTERFAT AND PRICES PAID TO PRODUCERS FOR 3.5 PERCENT MILK PER CWT. DELIVERED AT CONDENSERIES IN NORTH WEST CENTRAL SECTION, 1922-1935.
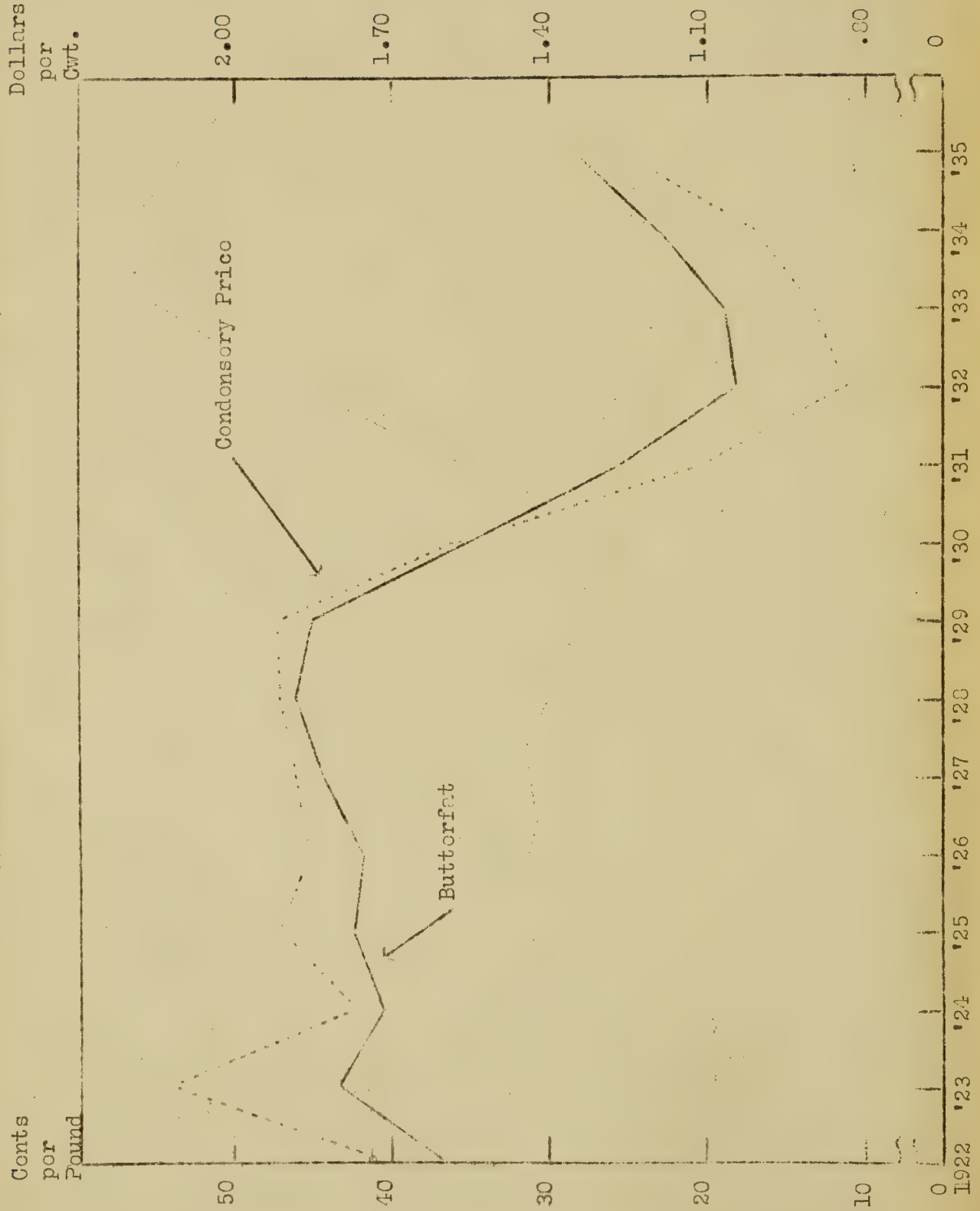
FIGURE 12:-RELATION BETWEEN U. S. FARM PRICE PER POUND OF BUTTERFAT AND PRICES PAID TO PRODUCERS FOR 3.5 PERCENT MILK PER CWT. DELIVERED AT CONDENSERIES IN SOUTH WEST SECTION, 1922-1935.
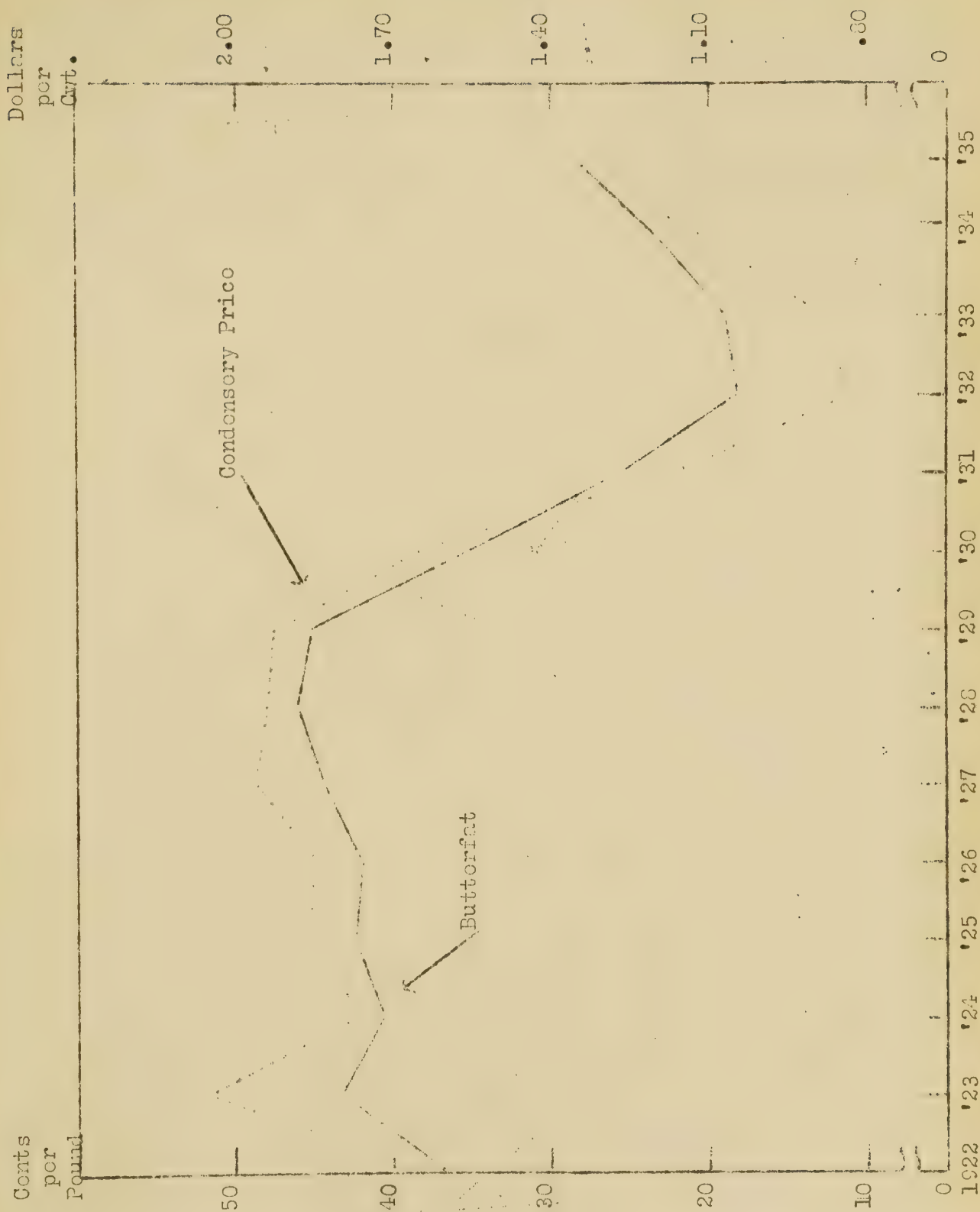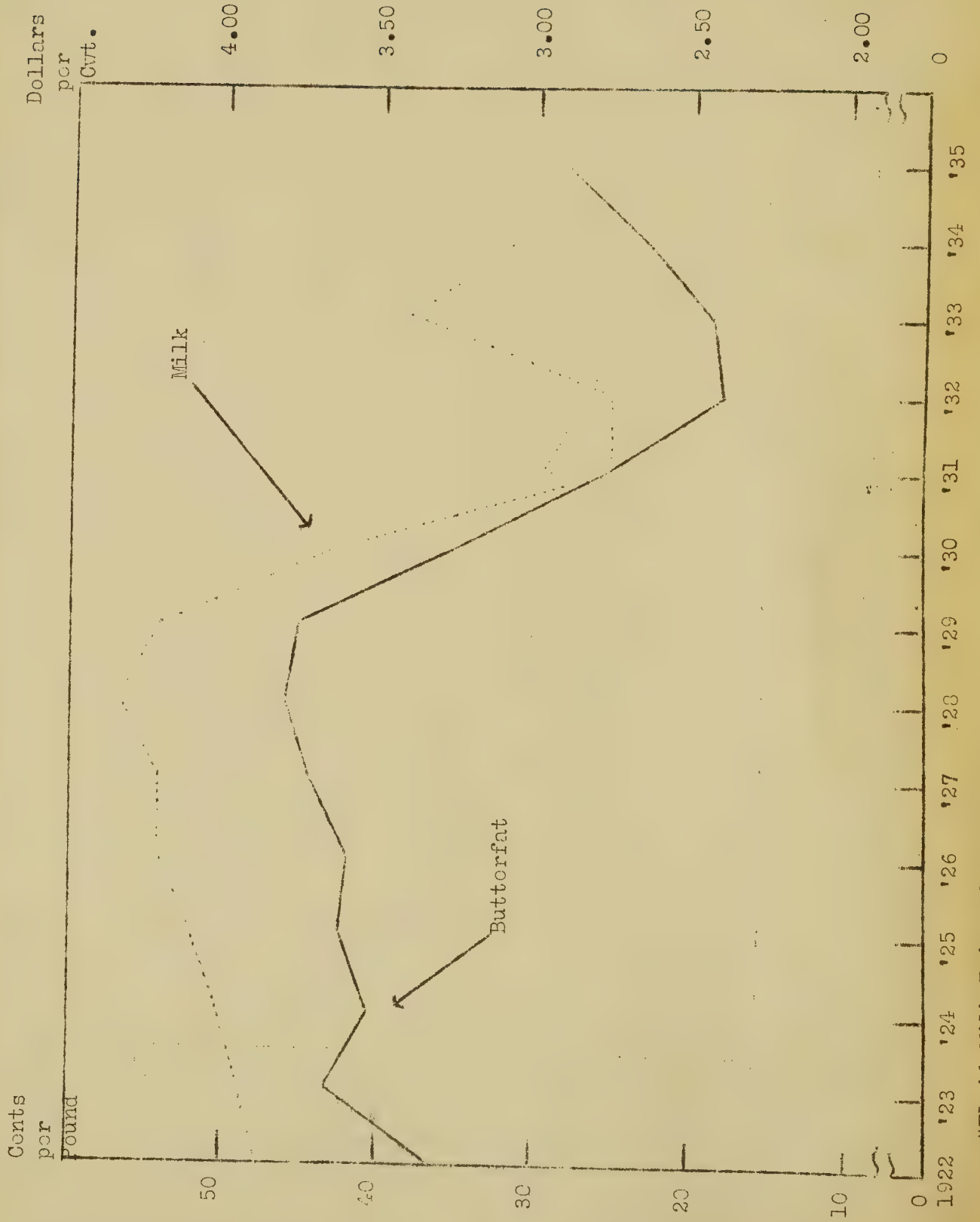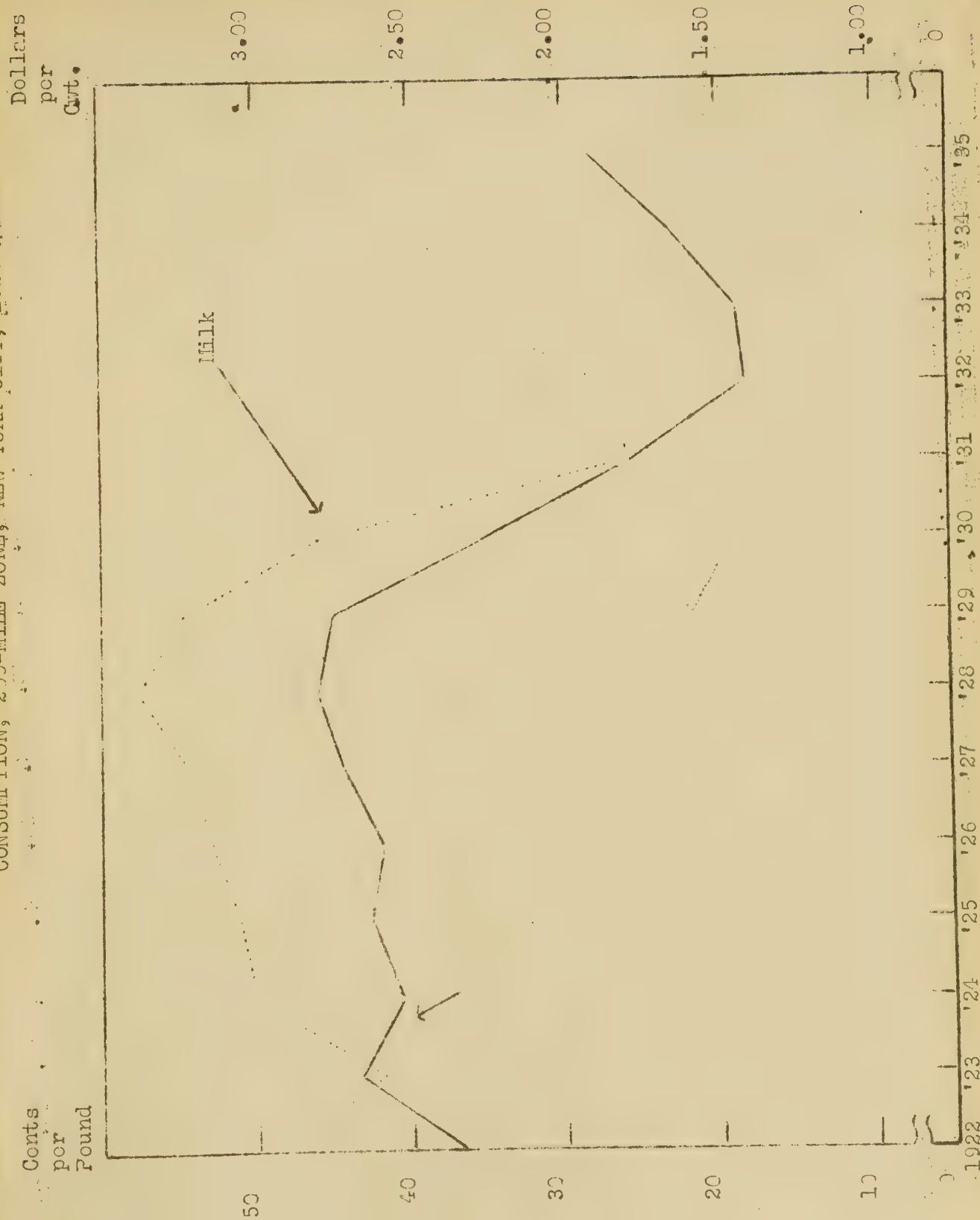
FIGURE 13:—RELATION BETWEEN U. S. FARM PRICE PER POUND OF BUTTERFAT AND PRICES PAID TO PRODUCERS FOR 3.5 PERCENT MILK PER CWT.* USED FOR FLUID CONSUMPTION F.O.B. HARTFORD, CONN., 1922-1935.
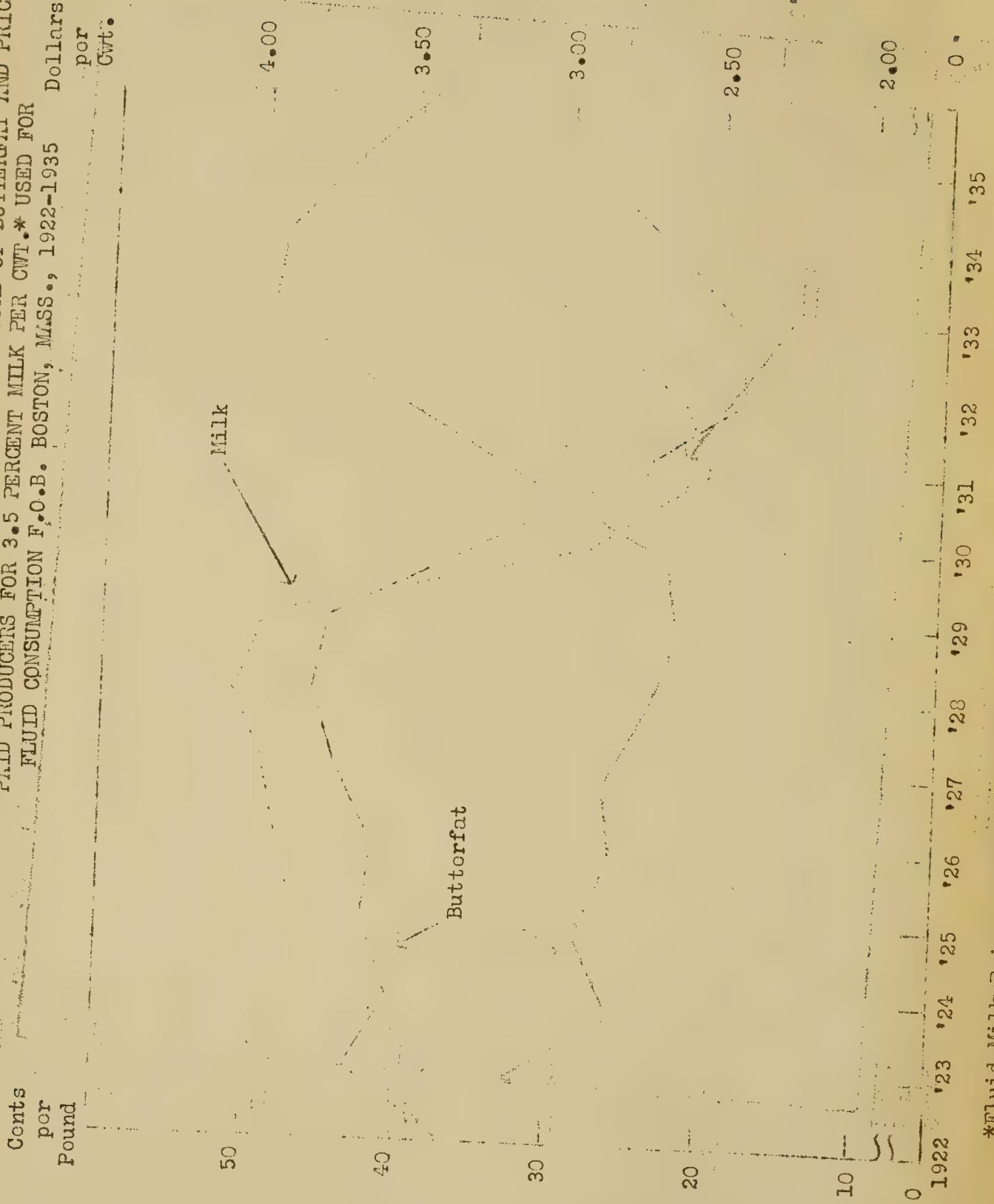
*Fluid Milk Prices Lagged One Year

FIGURE 14:-RELATION BETWEEN U. S. FARM PRICE PER POUND OF BUTTERFAT AND PRICE
PAID TO PRODUCERS FOR 3.5 PERCENT MILK PER CWT.* USED FOR FLUID
CONSUMPTION, 200-MILE ZONE, NEW YORK CITY, 1922-1935.

Cents
per
Pound

Dollars
per
Cwt.

Milk

3.00

2.50

2.00

1.50

1.00

0

50

40

30

20

10

0
'1922 '23 '24 '25 '26 '27 '28 '29 '30 '31 '32 '33 '34 '35

* Fluid Milk Prices Lagged One Year

FIGURE 15:- RELATION BETWEEN U. S. FARM PRICE PER POUND OF BUTTERFAT AND PRICES
PAID PRODUCERS FOR 3.5 PERCENT MILK PER CWT.* USED FOR
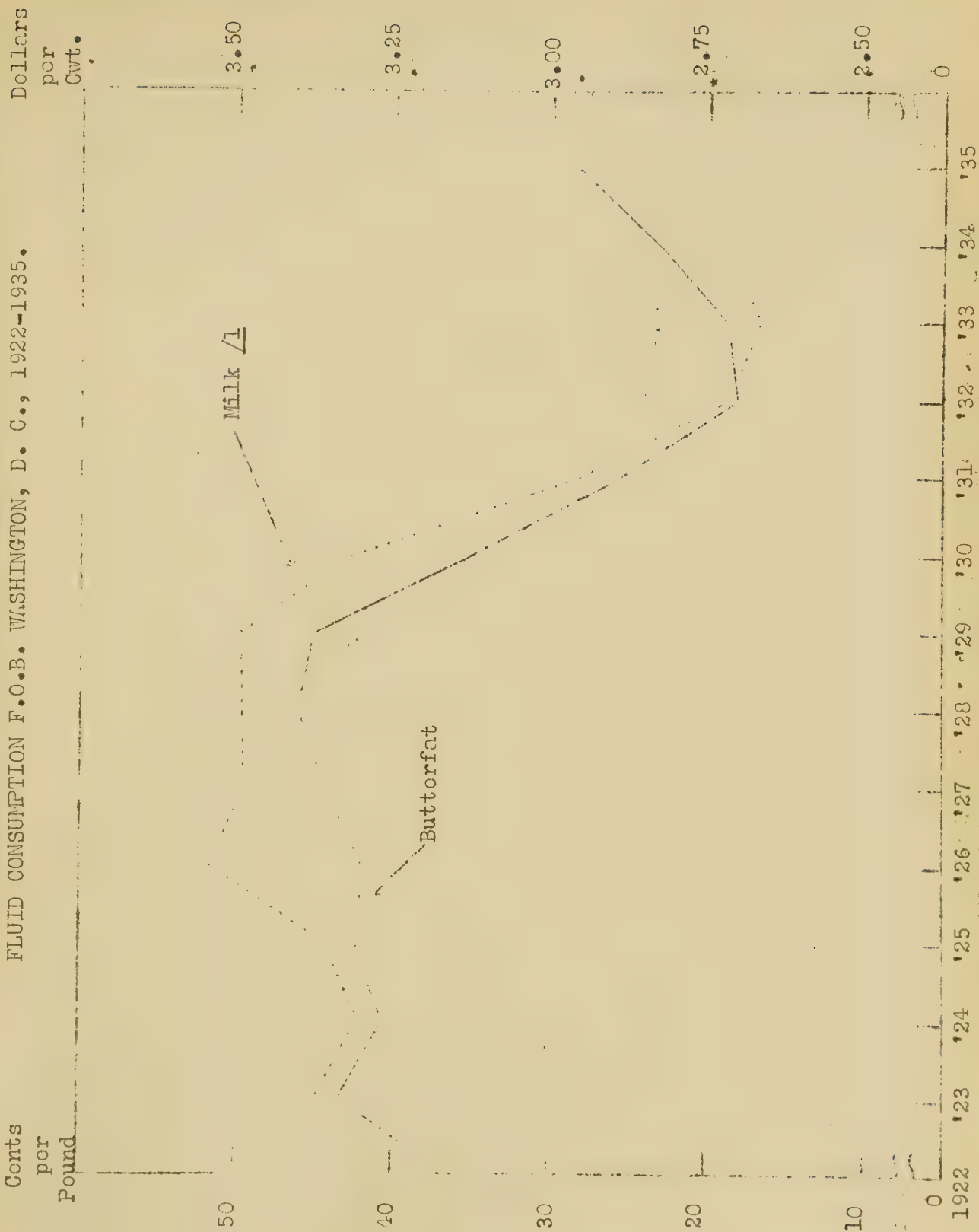FLUID CONSUMPTION F.O.B. BOSTON, MASS., 1922-1935

*Fluid Milk Prices Lagged One Year

FIGURE 16:--RELATION BETWEEN U. S. FARM PRICE PER POUND OF BUTTERFAT AND PRICES
PAID PRODUCERS FOR 3.5 PERCENT MILK PER CWT.* USED FOR
FLUID CONSUMPTION F.O.B. WASHINGTON, D. C., 1922-1935.

Cents
per
Pound

Dollars
per
Cwt.

Milk /1

Butterfat

50

40

30

20

10

0
1922 '23 '24 '25 '26 '27 '28 '29 '30 '31 '32 '33 '34 '35

3.50

3.25

3.00

2.75

2.50

0

*Fluid Milk Prices Lagged One Year   /1 National Cooperative Milk-Producers Federation Reports

FIGURE 17:- RELATION BETWEEN U. S. FARM PRICE PER POUND OF BUTTERFAT AND PRICES
PAID PRODUCERS FOR 3.5 PERCENT MILK PER CWT.* USED FOR FLUID
CONSUMPTION F.O.B. LOS ANGELES, CALIF., 1922-1935

Cents
per
Pound

*Dollars
per
Cwt.

Buttorfat

Milk

50

40

30

20

10

0
1922 '23 '24 '25 '26 '27 '28 '29 '30 '31 '32 '33 '34 '35
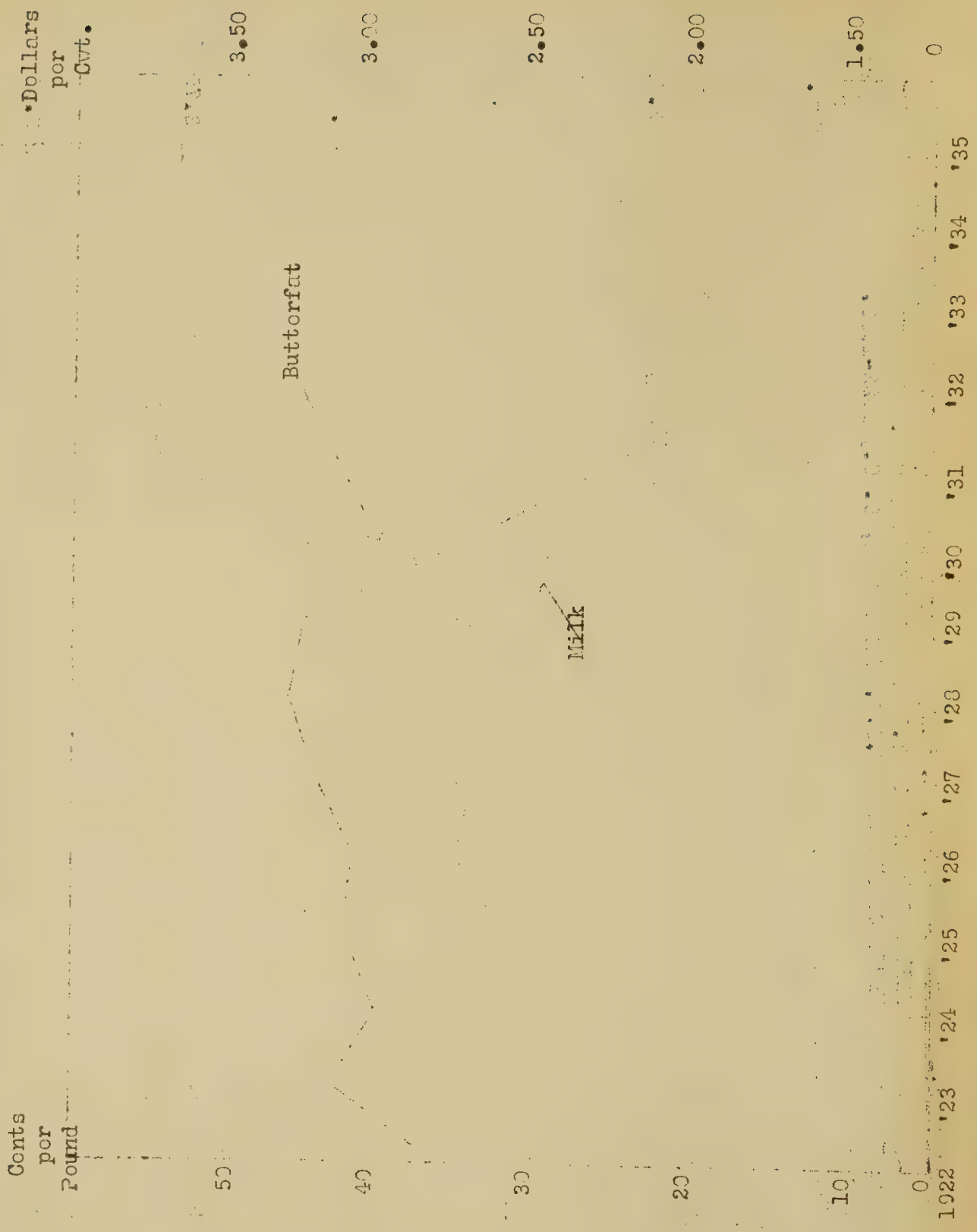
3.50

3.00

2.50

2.00

1.50

0

* Fluid Milk Prices Lagged One Year.

FIGURE 18:—RELATION BETWEEN U. S. FARM PRICE PER POUND OF BUTTERFAT AND PRICES PAID PRODUCERS FOR 3.5 PERCENT MILK PER CWT.* USED FOR FLUID CONSUMPTION F.O.B. BALTIMORE, MD., 1922-1935.

*Fluid Milk Prices Lagged One Year.

FIGURE 19:--RELATION BETWEEN U. S. FARM PRICE PER POUND OF BUTTERFAT AND PRICES
PAID PRODUCERS FOR 3.5 PERCENT MILK PER CWT. USED FOR
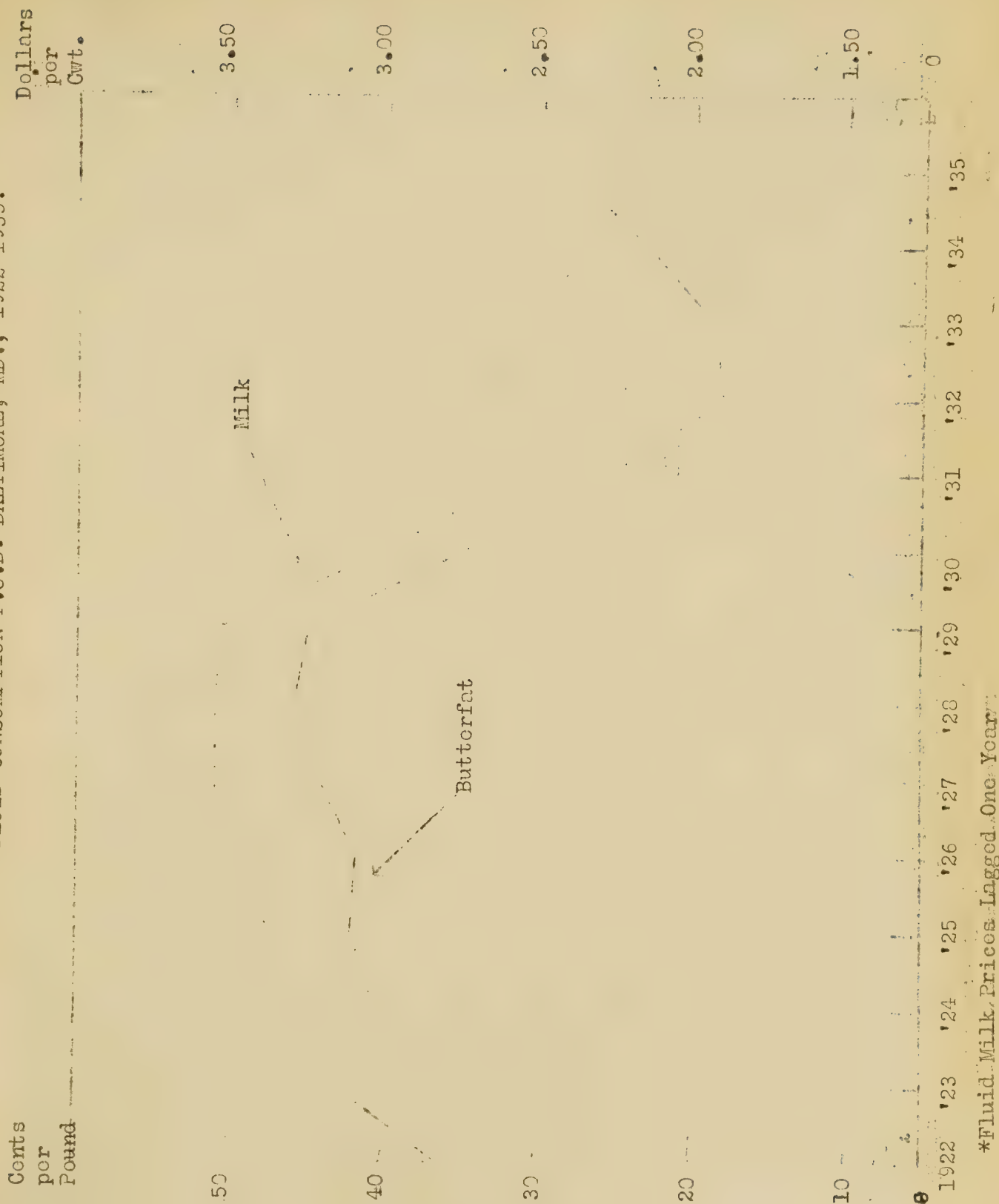FLUID CONSUMPTION F.O.B. SEATTLE, WASH., 1922-1935.

Cents
per
Pound.

Dollars
per
Cwt.

Milk

Butterfat

60

50

40

30

20

10

0   1922 '23 '24 '25 '26 '27 '28 '29 '30 '31 '32 '33 '34 '35

2.75

2.50

2.25

2.00

1.75

1.50

0

FIGURE 20:-RELATION BETWEEN U. S. FARM PRICE PER POUND OF BUTTERFAT AND PRICES
PAID PRODUCERS FOR 3.5 PERCENT MILK PER CWT. USED FOR FLUID
CONSUMPTION F.O.B. RICHMOND, VIRGINIA, 1922-1935

FIGURE 21:—RELATION BETWEEN U. S. FARM PRICE PER POUND OF BUTTERFAT AND PRICES PAID PRODUCERS FOR 3.5 PERCENT MILK PER CWT.* USED FOR FLUID CONSUMPTION F.O.B. MILWAUKEE, WIS., 1922-1935.
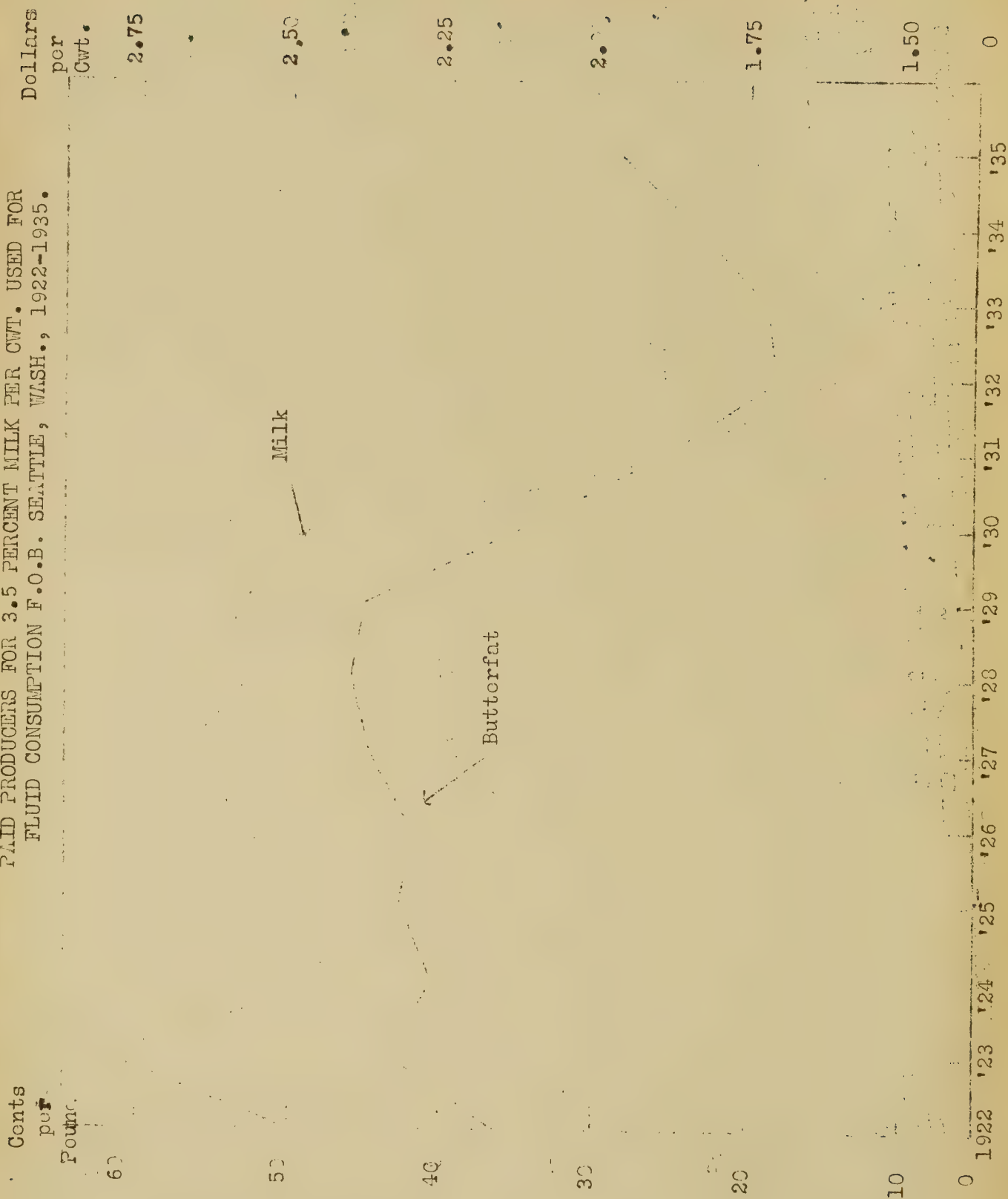
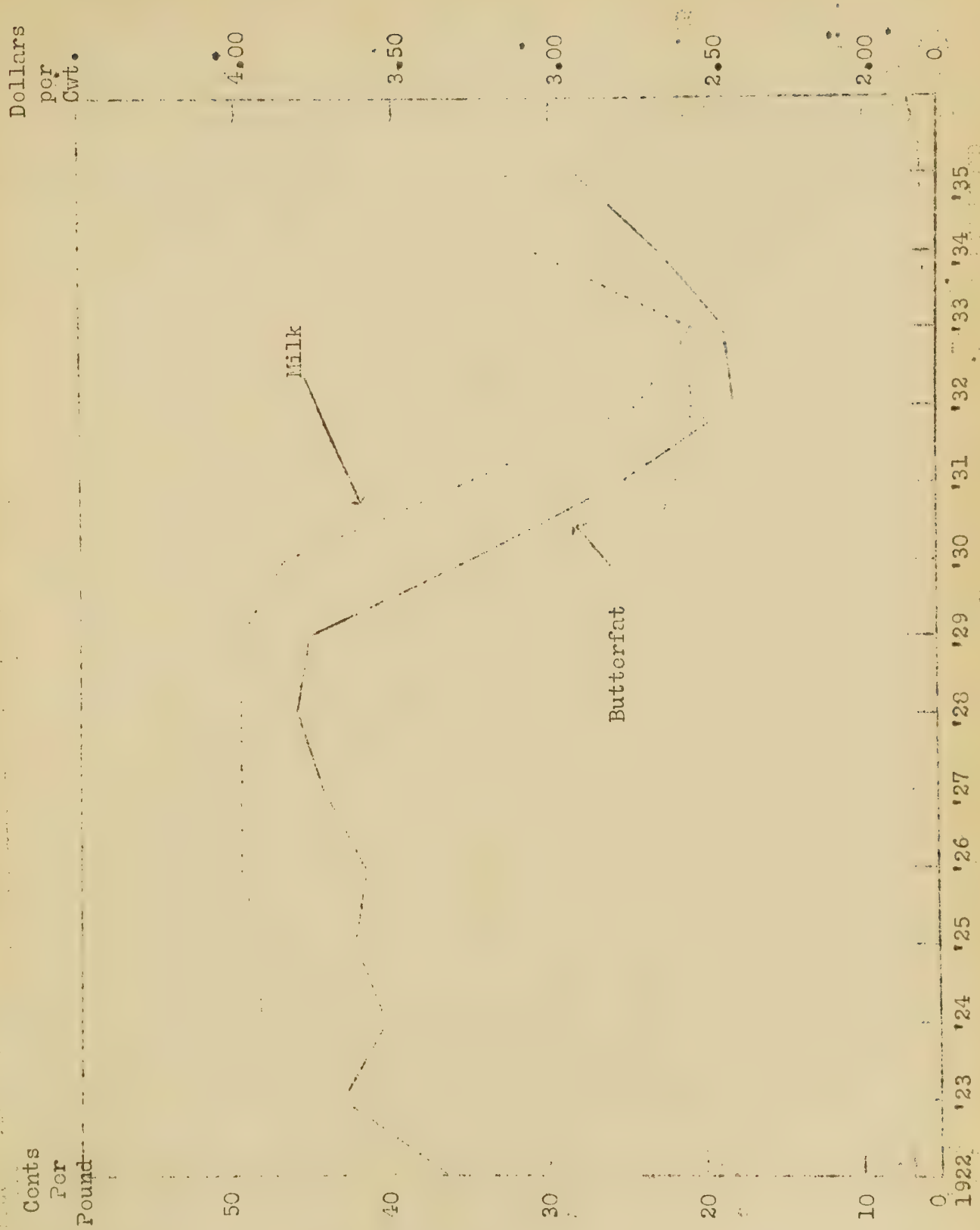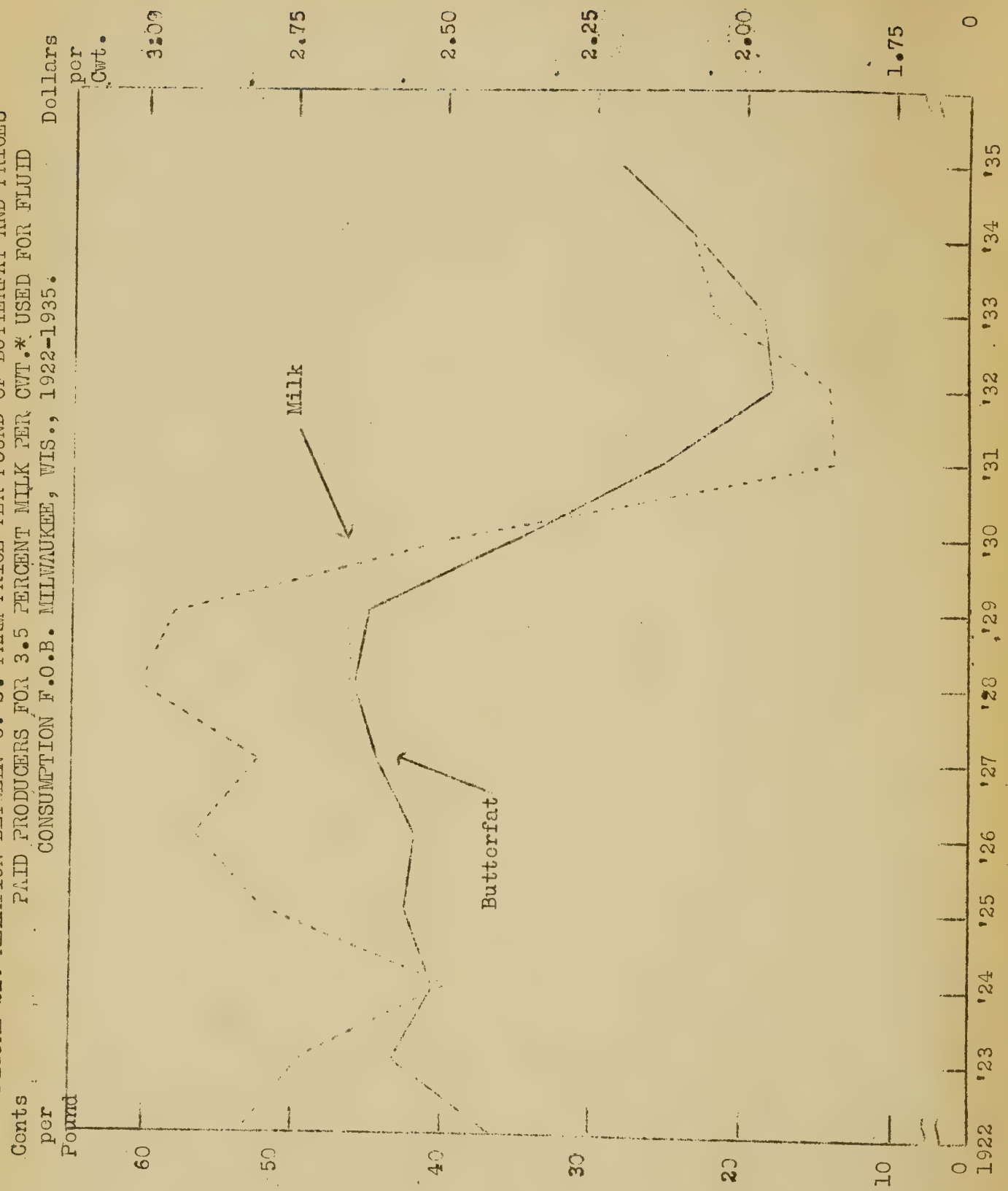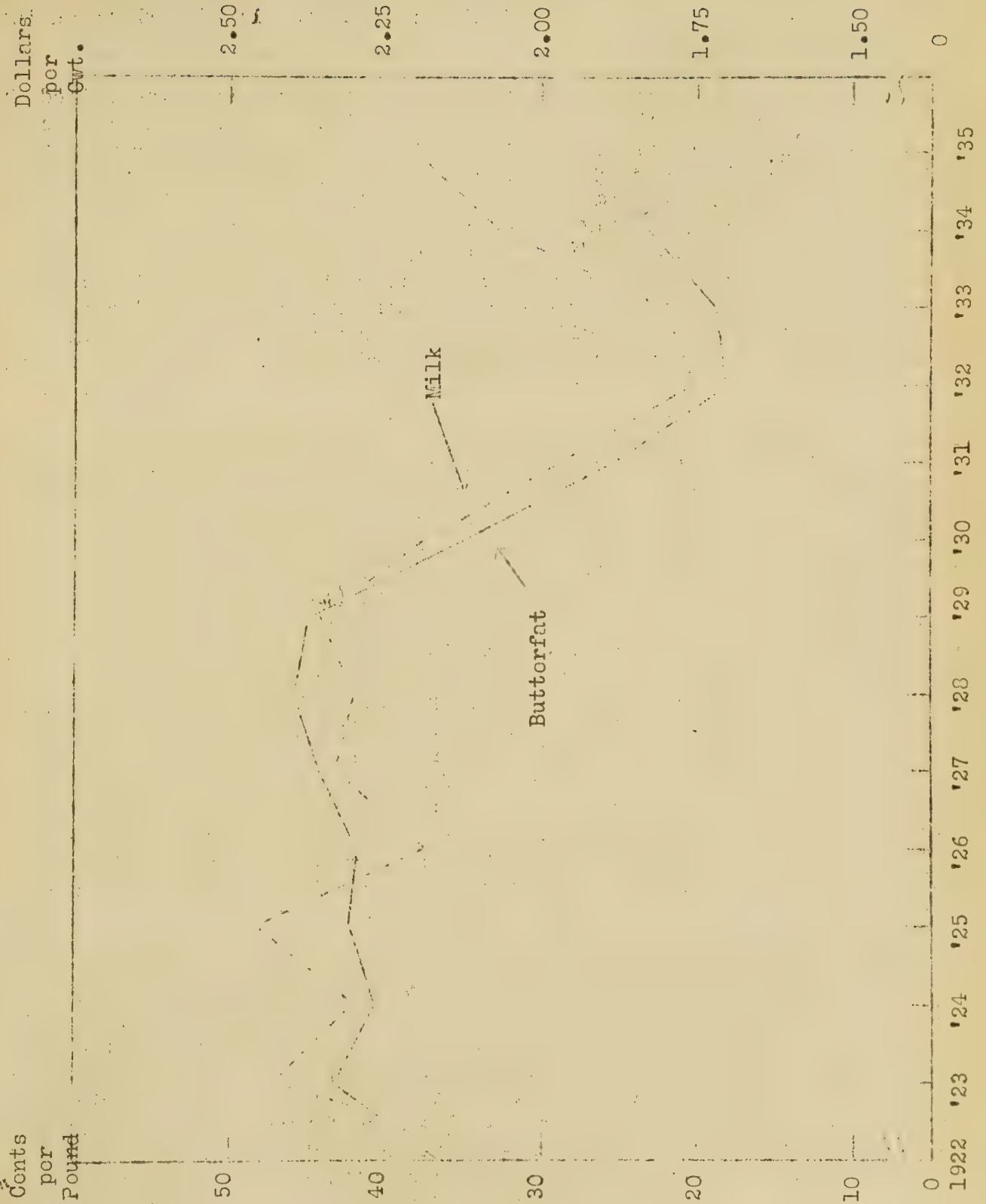* Fluid Milk Prices Lagged One Year.

FIGURE 22:-RELATION BETWEEN U. S. FARM PRICE PER POUND OF BUTTERFAT AND PRICES PAID TO PRODUCERS FOR 3.5 PERCENT MILK PER CWT. USED FOR FLUID CONSUMPTION F.O.B. LOUISVILLE, KY., 1922-1935

F. Effect of price fluctuations in unstabilized markets on interstate commerce.

Price fluctuations in many milk markets throughout the United States, caused by changes in the demand and supply situation are made more severe by price wars, price cutting, and other methods of destructive competition among distributors. In the course of such practices, distributors reduce the prices paid by them to dairy farmers for market milk purchased below the point justified by the existing supply and demand situation. With the decline in prices, there results an adverse effect on the market of butter and of other manufactured dairy products in general, which effect has been translated through the intermediary of interstate commerce in such products into a decline of prices in interstate markets for milk in all of its usages. The happenings in this series of repercussions are in strict accord with the price relationships concretely established in the preceding pages and may be outlined in connection with the effect of the price fluctuations, as follows:

(1) Effect of price fluctuations on local markets. The slump in prices of market milk by agency of destructive trade methods brings about the sale of a greater quantity of manufacturing milk to local processors, which increased sale results in a correspondingly increased amount of dairy products being locally manufactured. Such shifting of the method of disposal of the milk produced is readily explainable by the facts (a) that the differential between the price paid to the producer of market milk and the price paid to the producer of manufacturing milk normally tends to equal the difference between the cost of producing milk in conformity with the applicable health regulations of the market in which sold and the cost of producing milk which does not comply with such regulations, and (b) that if price conditions warrant, by such price differential being less than the difference in cost of production, producers will tend to abandon the production of market milk to produce manufacturing milk. While it is true that a continuation of the process of shifting the method of disposal of the two kinds of milk will eventually restore the normal price relationship, the accomplishment of this restoration is prolonged indefinitely through a continuation of price wars and a resultingly continued decline of market milk prices below the point justified by the existing supply and demand situation.

Thereafter, the increased output of dairy products in the local market is felt, in accord with the practical working of the law of supply and demand, by a destabilization of prices and the concomitant lowering of the price of butter, as one of those products; and, further, by an increase in the supply of butter that is transported to interstate markets to receive a price more favorable than that of the local market. The more favorable price in interstate markets is obtainable in conformity with the fact that the free flow of manufactured dairy products between markets results in inter-market price relationships of such nature that the prices of these products tend to vary between markets only by the amount of transportation costs from one market to the next, plus the necessary additional handling charges other than transportation.

Moreover, the disturbance of the price balance between fluctuating

markets and interstate markets serves, following the rule of intermarket rela-
tionships just enunciated, to check the importation from the latter markets to
the former of dairy products; since the price differential between the two
classes of markets comes to be less than the cost of intermarket transportation
charges, plus the necessary additional handling charges other than transporta-
tion.

(2) Effect of price fluctuations on interstate markets. The added
influx of butter and other dairy products into these markets from unstabilized
markets renders an increased supply of such products available for sale. The
principle of intermarket price relationships, which began to operate in the un-
stabilized areas as noted in the foregoing pages, continues to operate on the
interstate markets concurrently with the entry of the additional dairy products;
and, resultingly, the price of butter, and the prices of other dairy products as
well, tend to decline due to the increased supply so that price levels equiva-
lent to those of the fluctuating markets, plus the differential of transportation
and extra handling charges, are reached.

Successively, the lowering of prices of dairy products conduces to the
payment of lower prices for the manufacturing milk utilized in the manufacture
of these products; a development which moves from the facts that (a) the prices
of butter and other dairy products are the prime determinants of the price of
butterfat, and (b) that the prices of butterfat in all its uses are determinants
of the price of manufacturing milk. The markedly close relationships, on both
national and local market scales, between the prices of butter and of other
manufactured products and the price of butterfat serve to demonstrate these facts.

Finally, the lowered price of manufacturing milk results in a lowered
price of market or fluid milk, since producers can and do shift their method of
disposal of milk to distributors so that the difference in prices between the
two kinds of milk comes to equal the additional cost of producing market milk
for sale as fluid milk.

(3) General effect of price fluctuations on all markets. Thus price
cutting on local markets results in (a) an increase in supply of butter and
other dairy products in the markets throughout the country, and (b) a decrease
in price paid to producers of manufacturing milk and to producers of market
milk. The effect of these local practices on the national market for manufactured
dairy products and upon the price of milk in other markets is emphasized when
these practices occur simultaneously in many local markets.

The same general effect tends to establish the fact that the fluid
milk prices in any given market tends to influence the fluid milk price in other
distant markets and to influence the price of milk used in manufactured dairy
products in interstate commerce.

PART V

The Price Structure Provided by the Proposed Agreement

A general discussion of the price structure for milk is contained in Technical Paper No. 1, published by the Dairy Section of the Agricultural Adjustment Administration. (See Appendix A.) In this paper it is shown that the classified price plan of selling milk to dealers develops from competition among dealers to secure a supply of milk that is closely related to their requirements for their fluid milk trade. This paper also shows how (1) differences in cost of transporting a unit of milk in fluid form and the product equivalent of a unit of fluid milk, and (2) varying sanitation regulations applicable to milk produced for fluid use and milk produced for use in manufacturing dairy products, affect the differential between the prices of milk used for different purposes.

The following discussion explains the price structure which is provided by the proposed agreement, and sets forth the available information relating to the utilization of milk and the supply and demand conditions in the San Diego market upon which the proposed price structure is based. The proposed use classification and price schedule appear reasonable in relation to these facts.

1. Use classification.

The classification plan incorporated in the proposed marketing agreement is as follows:

Class I - milk sold or distributed as milk;

Class II - milk sold or used to produce cream for consumption as cream, or milk sold or used to produce creamed buttermilk, creamed cottage cheese, flavored milks and milk drinks, and all milk not used in Classes I and III;

Class III - all milk sold or used to produce ice cream, ice cream mix, ice milk and/or ice milk mix.

The use classification provided by License No. 98, which defines four classes of milk, is more nearly adapted to conditions which prevailed in the market prior to the summer of 1935 than to the conditions which have prevailed since that time. Increased demand led to an agreement, effective June 1, 1935, which practically suspended Class III and Class IV, so that during the period June 1 - November 30, 1935, a total of less than 1,000 pounds of butterfat was reported in these two lower classes. This situation has led to the proposed reclassification of milk on a 3-class basis as outlined above.

The three classes proposed have been defined after consideration of the following basic factors: In California markets the distinction between "Grade A" cream, for purposes of fluid consumption, and "Grade B" cream, for manufacturing, is definite and of long standing. Any surplus of milk produced for the fluid milk market is subject to competition, (1) from "Grade A" cream, insofar as such surplus milk might be separated for cream for fluid consumption or for manufacturing certain creamed products, and (2) from "Grade B", or manufacturing, cream, insofar as any portion of the fluid milk surplus might be utilized for purposes in which the use of "Grade B", or manufacturing, cream is permissible, or for which the use of butterfat in sweet butter is possible. It is out of this situation that the advisability of providing for three classes of milk arises. Fluid milk is accounted for in Class I and priced higher than Class II due to the transportation differential as between milk and cream and, to a certain extent, to the convenience factor, which appears to be quite important due to the unusually wide fluctuations in fluid milk demand in San Diego. Class II and Class III milk have price characteristics determined by the f.o.b. market prices of "Grade A" and manufacturing cream shipped in from Imperial County.

A handler who sells all the milk which he receives from producers in Class I may purchase "Grade A" cream to supply his cream patrons and, by purchasing skim milk and adding the necessary ingredients, including butterfat from "Grade A" cream, may place on the market such products as are listed in Class II. If, on the other hand, the handler has received more milk from producers than is required to supply his fluid milk customers, he may separate the remainder, selling part of the cream for consumption as fluid cream and using the remainder of the cream and the skim milk to manufacture creamed buttermilk, creamed cottage cheese, and flavored milk drinks. The competitive value of milk used for these purposes, therefore, appears to be closely related to the value of "Grade A" cream.

The proposed wording of the Class II definition would require that all plant loss be accounted for as Class II milk.

Class III in the proposed classification is definitely an ice cream class. Manufacturing cream, which is produced under less stringent sanitary conditions and which sells on the cream market at a lower price than "Grade A" cream, is used largely in the manufacture of ice cream and ice cream mix. Any of the milk supply which handlers receive from local producers and separate for this purpose is disposed of, therefore, in competition with this lower-priced product.

Available information as to the probable utilization of local milk supplies during the coming spring and summer seasons is not definite as to what proportion of the local milk supply will be available for Class II and Class III uses, but it is probable that the local milk

supply will need to be heavily supplemented by supplies of "Grade A" and manufacturing cream from surplus cream producing areas.

Due to the California Pacific International Exposition, held at San Diego during the summer and fall of 1935 (and reopened February 12, 1936), there were four semi-monthly delivery periods in which producers were paid the Class I price for all milk delivered. Heavy demand and the effects of the tuberculosis eradication program on production probably will result in relatively small proportions of the local supply being utilized in Classes II and III.

2. Minimum prices to producers provided by the proposed marketing agreement.

The minimum prices which handlers would be required to pay producers, according to the terms of the proposed agreement, are as follows:

Class I   --64 cents per pound butterfat contained in milk delivered at the handler's plant;

Class II   --the average price of 92-score butter at Los Angeles plus an amount equal to the average amount over such quotation, per pound butterfat, paid wholesale to jobbers for market cream of "Grade A" quality, of approximately 40 percent butterfat content, in the San Diego market, as reported by the United States Department of Agriculture.

Class III --a price computed in a similar manner as Class II, using, instead of the price of "Grade A" cream, the price paid to jobbers for manufacturing cream of approximately 40 percent butterfat content.

A. Price history of the San Diego market.

Table 4 in Part III above shows that during the period 1920-1928, inclusive, the price of Class I milk in the San Diego market averaged 101.4 cents per pound butterfat. Table 22 indicates the prices per hundredweight of 4.0 percent milk and per pound butterfat paid producers for Class I milk by years 1931-1935 and by months January 1934-December 1935. In 1934 the average Class I price was 61 cents per pound butterfat, or 33.0 percent less than the price of 91 cents which prevailed in 1931. The average Class I price in 1935 was 65 cents per pound butterfat.

The price to handlers, f.o.b. San Diego, of Class II milk as "Grade A" cream received in San Diego from El Centro, Imperial County,

Table 22. SAN DIEGO, CALIFORNIA: Average prices of 4.0 percent Class I milk per hundredweight and per pound butterfat paid by distributors and retail price per quart paid by consumers, by years 1931-1933, by months 1934-1935.

Year and Month	Prices paid to producers for 4.0% Class I milk *		Prices paid by consumers per quart retail
	Per hundredweight — Dollars	Per pound fat — Cents	Cents
1931	3.64	91	13.2
1932	3.16	79	12.6
1933	2.40	60	11.3
1934	2.44	61	11.2
January	2.40	60	11.0
February	2.40	60	11.0
March	2.40	60	11.0
April	2.40	60	11.0
May	2.40	60	11.0
June	2.40	60	11.0
July	2.40	60	11.0
August	2.40	60	11.0
September	2.40	60	11.0
October	2.64	66	11.0-12.0
November	2.64	66	12.0
December	2.64	66	12.0
1935	2.60	65	12.0
January	2.64	66	11.9
February	2.68	67	12.0
March	2.68	67	12.0
April	2.68	67	12.0
May	2.68	67	12.0
June	2.68-2.56	67-64	12.0
July	2.56	64	12.0
August	2.56	64	12.0
September	2.56	64	12.0
October	2.56	64	12.0
November	2.56	64	12.0-11.0
December	2.56	64	11.0

* Basic price.

Compiled from reports of the Bureau of Agricultural Economics, Division of Dairy and Poultry Products.

California, is shown in Table 23, by months, January 1933-December 1934, inclusive. The f.o.b. city price of "Grade A" cream from this source averaged approximately 14 cents higher than the price of 92-score butter at Los Angeles. Information concerning this price relationship is not at hand by months for the year 1935, but reports of the market adminis-trator, License No. 98, indicate that recently the margin of the "Grade A" cream price over the butter price has been 20-23 cents, f.o.b. San Diego. 6/ The pricing arrangement provided by the proposed marketing agreement allows the handler the value of the skim milk to cover the cost of processing milk into cream. The fact that there was at times a shortage of skim milk was an additional factor in the premium paid for milk in the lower classes during certain delivery periods in 1935. (See Table 24.)

Table 25 shows the cost to handlers of "Grade B" or manufac-turing cream, f.o.b. San Diego, received from El Centro, Imperial County, California, by months, June 1933-May 1934, inclusive. The f.o.b. city price of such cream was 7-8 cents above the price of 92-score butter in the Los Angeles market. Recent reports from the market indicate that the amount of this differential currently is 12 cents.

The differentials of the Class I price over the "Grade A" cream price, f.o.b. San Diego, January 1933 - December 1934 are shown, by months, in Table 26. The average differential was 25.17 cents in 1933 and 22.16 cents in 1934. Figure 23 shows that in October 1935 the differential of the Class I price over the "Grade A" cream price was slightly less than 10 cents, or less than half of such differential in October 1933 or in October 1934. The differential of the Class I price over the price of 92-score butter at Los Angeles, however, was 33 cents in October 1935 as compared with 41 cents in October 1933 and 36 cents in October 1934.

Table 27, together with Table 24, presents a complete price history of the San Diego market during the operation of License No. 98, from February 1, 1935 to November 30, 1935. The data shown in Table 27 indicate that the lowest weighted average pool price which was paid during this period was 58.024 cents per pound butterfat during the delivery period March 16-31. The highest weighted average price, 64 cents (equal to the Class I price), was paid during the two delivery periods in August and during the two delivery periods in November.

Table 28 presents on a monthly basis the data contained in Table 27.

6/ This margin was reduced from 23 cents to 20cents per pound butter-fat on December 9, 1935. (Report of Market Administrator, License No. 98.)

Table 23. SAN DIEGO, CALIFORNIA: Cost to handlers of Class II
milk moved from El Centro, California, as
Grade A cream, by months, 1933-1934.

Month	92-score butter at Los Angeles	Price to producers f.o.b. ranch	Cost of hauling ranch to plant	Approximate cost of processing	Transportation to San Diego	Price to distributors f.o.b. San Diego
	Cents per pound	Cents per pound fat	Cents per pound fat	Cents per pound fat	Cents per pound fat	Cents per pound fat
1933						
January	20.58	25.59				
February	18.75	23.78	3.8	3.5	1.38	34.27
March	19.22	24.25	3.8	3.5	1.38	32.46
April	20.33	25.36	3.8	3.5	1.38	32.93
May	23.00	28.00	3.8	3.5	1.38	34.04
June	22.95	28.00	3.8	3.5	1.38	36.68
July	24.13	29.15	3.8	3.5	1.38	36.68
August	21.58	26.58	3.8	3.5	1.38	37.83
September	21.60	26.60	3.8	3.5	1.38	35.26
October	21.64	26.68	3.8	3.5	1.38	35.28
November	22.55	27.58	3.8	3.5	1.38	35.36
December	19.74	24.75	3.8	3.5	1.38	36.26
			3.8	3.5	1.38	33.43
1934						
January	19.29	24.29				
February	24.53	29.55	3.8	3.5	1.38	32.97
March	24.27	29.33	3.8	3.5	1.38	38.23
April	21.37	26.41	3.8	3.5	1.38	38.01
May	21.60	26.63	3.8	3.5	1.33	35.09
June	22.95	27.99	3.8	3.5	1.38	35.31
July	23.51	28.54	3.8	3.5	1.38	36.67
August	27.02	32.06	3.8	3.5	1.38	37.22
September	28.36	33.40	3.8	3.5	1.38	40.74
October	29.48	34.50	3.8	3.5	1.38	42.08
November	33.36	38.37	3.8	3.5	1.38	43.18
December	31.34	36.84	3.8	3.5	1.38	47.05
			3.8	3.5	1.38	45.52

Compiled from report submitted by Felix Landis, Secretary-Manager, Dairy Products
Arbitration Board of San Diego.

Table 24. SAN DIEGO, CALIFORNIA: Classes I, II, III, IV and weighted average price of all milk per pound butterfat, by delivery periods, February 1935-December 1935.

Delivery period	Class I	Class II	Class III	Class IV	Weighted average price
	Cents	Cents	Cents	Cents	Cents
Feb. 1-15	67.00	59.30	53.30	40.29	62.61
Feb.16-28	67.00	54.59	48.59	35.52	60.80
Feb. average	67.00	56.94	50.94	37.90	61.70
Mar. 1-15	67.00	53.91	47.91	34.73	60.72
Mar.16-31	67.00	48.91	42.91	29.73	58.94
Mar. average	67.00	51.41	45.41	32.23	59.83
Apr. 1-15	67.00	51.70	45.70	32.46	60.58
Apr.16-30	67.01	48.19	42.19	29.51	60.92
Apr. average	67.00	49.94	43.94	30.98	60.75
May 1-15	67.00	47.28	41.28	28.17	58.88
May 16-31	67.00	47.51	41.51	28.36	59.51
May average	67.00	47.40	41.40	28.26	59.20
June 1-15	67.00	47.33	41.33	28.21	61.70
June 16-30	64.60 1/	46.18	40.18	27.04	61.45
June average	65.80	46.76	40.76	27.62	61.58
July 1-15	64.00	47.42	-	26.79	60.96
July 16-31	64.00	49.8	-	27.36	61.49
July average	64.00	48.64	-	27.08	61.22
Aug. 1-15	64.00	-	-	-	64.00
Aug. 16-31	64.00	-	-	-	-
Aug. average	64.00	-	-	-	-
Sept.1-15	64.00	52.00	43.25	30.25	61.482
Sept. 16-30	64.00	52.28	43.59	30.71	61.809
Sept. average	64.00	52.14	43.42	30.48	61.646
Oct. 1-15	64.00	53.24	44.79	31.73	61.308
Oct. 16-31	64.00	54.96	46.95	33.71	62.282
Oct. average	64.00	54.10	45.87	32.72	61.795
Nov. 1-15	64.00	-	-	-	64.00
Nov. 16-30	64.00	-	-	-	64.00
Nov. average	64.00	-	-	-	64.00
Dec. 1-15					
Dec. 16-31					
Dec. average					

1/ Price changed to 64 cents on June 19, 1935.
Compiled from reports of Market Administrator, License No. 98.

Table 25. SAN DIEGO, CALIFORNIA: Cost to handlers of Class
III milk moved from El Centro, Calif-
ornia, as "Grade B" cream, June 1933-
May 1934.

Month	:92-score :butter at :Los :Angeles :per pound :	:Price to :producers :f.o.b. :ranch per :pound :fat	:Cost of :hauling - :ranch to :plant :per pound :fat	:Approximate :cost of :process- :ing per :pound fat :'.	Transport- : ation to : San Diego : per pound : fat	:Price to :distribu- :tors f.o.b. :San Diego :per pound :fat
	Cents	Cents	Cents	Cents	Cents	Cents
1933						
June	22.95	21.50	3.8	3.5	1.38	30.18
July	24.13	23.62	3.8	3.5	1.38	32.30
Aug.	21.58	20.88	3.8	3.5	1.38	29.56
Sept.	21.60	20.62	3.8	3.5	1.38	29.30
Oct.	21.64	20.68	3.8	3.5	1.38	29.36
Nov.	22.55	21.56	3.8	3.5	1.38	30.24
Dec.	19.74	18.27	3.8	3.5	1.38	26.95
1934						
Jan.	19.29	17.27	3.8	3.5	1.38	25.95
Feb.	24.53	23.38	3.8	3.5	1.38	32.06
Mar.	24.27	23.29	3.8	3.5	1.38	31.97
Apr.	21.37	20.36	3.8	3.5	1.38	29.04
May	21.60	20.60	3.8	3.5	1.38	29.28

Compiled from report submitted by Felix Landis, Secretary-Manager, Dairy Products
Arbitration Board of San Diego.

Table 26. Differential of Class I price over Grade A cream price, f.o.b. San Diego, 1933 and 1934.

| Year | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. | Aver. |
	Cents	Cents	Cents	Cents	Cents	Cents	Cents	Cents	Cents	Cents	Cents	Cents	Cents
1933	32.73	34.54	34.07	23.46	13.32	13.32	14.17	26.24	27.72	27.64	26.74	28.07	25.17
1934	27.03	21.77	21.99	24.91	24.69	23.33	22.78	19.26	17.92	22.82	18.95	20.48	22.16

Computed from reports of Bureau of Agricultural Economics, Division of Dairy and Poultry Products and report of Felix Landis, Secretary-Manager, Dairy Products Arbitration Board of San Diego.

FIGURE 23:—AVERAGE PRICES OF 92-SCORE BUTTER AT LOS ANGELES, "GRADE A" CREAM
F.O.B. SAN DIEGO, AND CLASS I MILK, F.O.B. SAN DIEGO,
BY MONTHS, JANUARY 1933 — JANUARY 1936.

Cents
per
Pound

Class I milk

"Grade A" cream

92-score butter

70

60

50

40

30

20

10

0

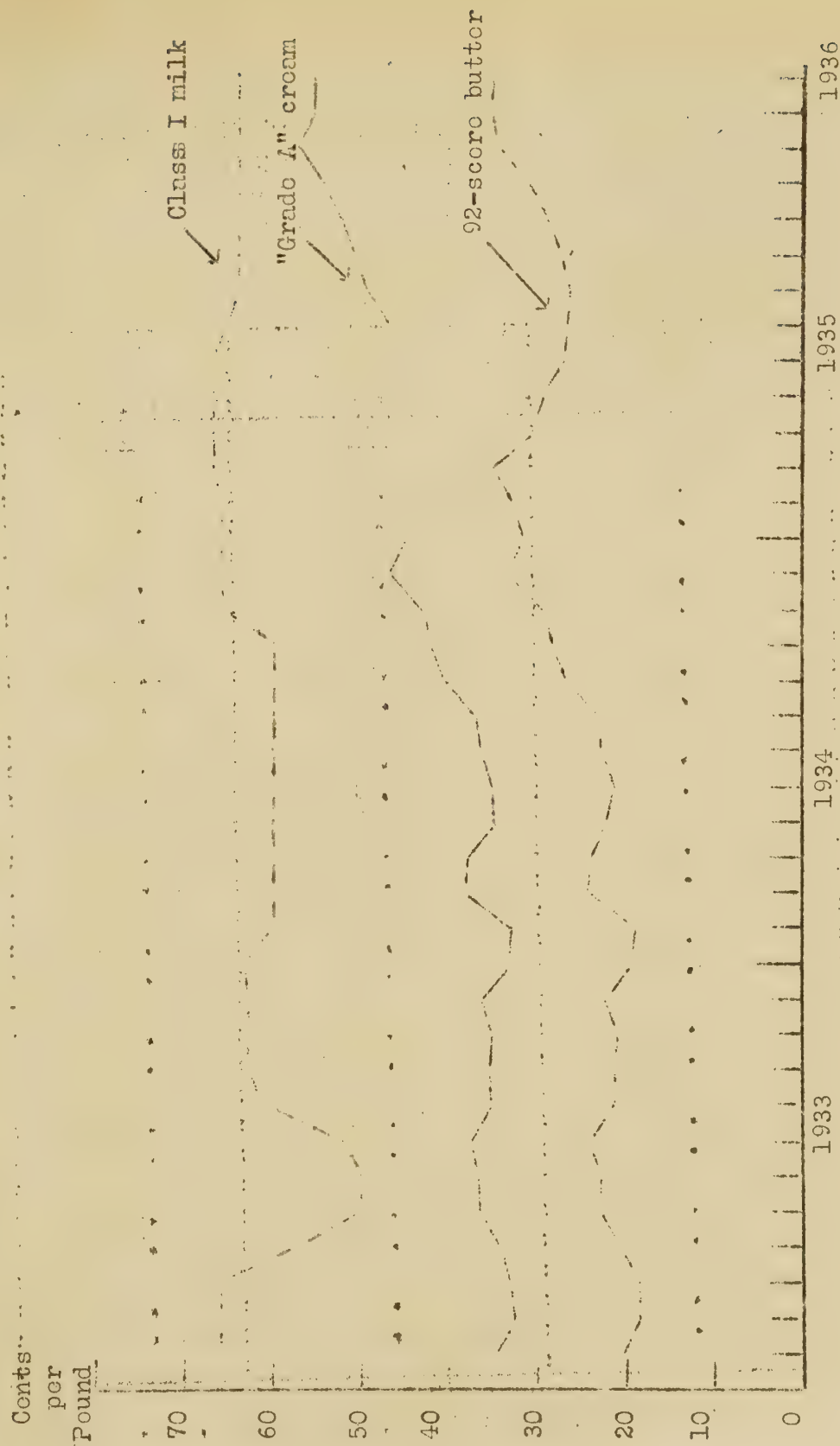1933   1934   1935   1936

Table 27. SAN DIEGO, CALIFORNIA: License price of Class I milk, producers'
price for base milk, and weighted average price for
all milk by delivery periods and price of 92-score
butter at Los Angeles by months, February through
November, 1935.

Delivery period Feb.- Nov. 1935	Class I price per pound butterfat	Delivered base price per pound butterfat	Weighted average pool price per lb. b'fat.	92-score butter at Los Angeles per lb
	Cents	Cents	Cents	Cents
Feb. 1-15	67.0	62.610	61.746	35.190
16-28	67.0	60.800	59.704	
Mar. 1-15	67.0	60.720	59.915	30.730
16-31	67.0	58.940	58.024	
Apr. 1-15	67.0	60.580	59.678	29.560
16-30	67.0	60.920	60.094	
May 1-15	67.0	58.880	58.302	27.500
16-31	67.0	59.510	58.992	
June 1-15	67.0	61.700	61.701	27.025
16-30	64.6 1/	61.450	61.409	
July 1-15	64.0	60.960	60.556	26.610
16-31	64.0	61.490	61.492	
Aug. 1-15	64.0	64.000	64.000	27.850
16-31	64.0	64.000	64.000	
Sept. 1-15	64.0	61.482	61.482	29.170
16-30	64.0	61.809	61.809	
Oct. 1-15	64.0	61.308	61.308	31.220
16-31	64.0	62.282	62.282	
Nov. 1-15	64.0	64.000	64.000	34.360
16-30	64.0	64.000	64.000	

Compiled from reports of Market Administrator, License No. 98.

1/ Price changed to 64 cents on June 19, 1935.

Table 28. SAN DIEGO, CALIFORNIA: License price of Class I milk, producers'
price for base milk, and weighted average price for
all milk and price of 92-score butter at Los Angeles,
by months, February through November, 1935.

Months	Class I price per pound butterfat	Delivered base price of 4% milk per lb.B'fat	Weighted average pool price per lb. B'fat	92-score butter at Los Angeles per pound
1935	Cents	Cents	Cents	Cents
February	67.000	61.710	60.725	35.190
March	67.000	59.830	58.970	30.730
April	67.005	60.750	59.886	29.560
May	67.000	59.200	58.647	27.500
June	66.120	61.575	61.555	27.025
July	64.000	61.225	61.024	26.610
August	64.000	64.000	64.000	27.850
September	64.000	61.646	61.646	29.170
October	64.000	61.795	61.795	31.220
November	64.000	64.000	64.000	34.360

Compiled from reports of the Market Administrator and the reports of the Bureau of
Agricultural Economics.

B. Demand conditions.

(1) Business and industrial activity.

Due to the 1935 California Pacific International Exposition, business activity and employment in the San Diego Marketing Area showed very definite improvement. The upward trend was evidenced for several months prior to the actual opening of the Exposition, as shown by certain business indicators covering the first six months of 1935. The following data, submitted by the Market Administrator, License No. 98, give comparisons as between June 1935 and June 1934, and between January-June 1935, and January-June 1934.

Comparing June 1935 with June 1934, there was a 20 percent increase in retail sales with improved collections. The volume of milk sales was approximately 20 percent greater. Sales of automobiles showed a 70 percent increase, and there were increases in postal receipts, bank debits, and the value of building permits of 37 percent, 55 percent, and 192 percent, respectively.

Comparing the period January-June 1935 with the same period in 1934, the values of postal receipts, bank debits, and building permits increased 25 percent, 32 percent, and 171 percent, respectively.

The total number of civilian and military employees was 84,000 in 1935, as compared with 80,000 in 1930. The total annual payroll was $108,000,000 in 1935 and $114,000,000 in 1930.

According to the Monthly Review of Business Conditions, issued November 20, 1935, by the Federal Reserve Bank of San Francisco, employment in the State of California showed considerable gains during October 1935 as compared with October 1934. (See Table 29.) There was an eight percent increase of employees in the 1,142 firms reporting. Improvement occurred in all lines of industry reported.

Table 30 presents index numbers of employment in manufacturing industries in Los Angeles by months, November 1931-October 1935. In October 1935 the index was 116.2 (November 1931 = 100), which index is the highest in the series. Table 31 contains similar data relative to payrolls. The index for October 1935 was 107.6 (November 1931 = 100), and was the highest in the series excepting that for September 1935.

Bank debits in San Diego and other southern California cities showed marked increases in October 1935 over October 1934, and for the ten-month period, January-October 1935, compared with the same period in 1934. Table 32 shows the bank debits for specified cities in California during specified periods in 1935 compared with the same periods in 1934.

Table 29. Employment in specified industries in the State of California,
October 1935 and October 1934

Industries	Number of firms reporting	Number of employees		Percent change, Oct. 1935 from Oct. 1934
		October 1935	October 1934	
Food, beverages, and tobacco	254	45,462	42,404	+ 7.2
Public Utilities	49	46,633	44,891	+ 3.9
Wholesale and retail	414	54,861	51,748	+ 6.0
Stone, clay, and glass products	56	6,524	5,747	+13.5
Lumber and wood manufactures	101	14,563	12,931	+12.6
Textiles	13	1,599	1,510	+ 5.9
Clothing, millinery and laundering	117	9,511	9,034	+ 5.3
Other industries 1/	550	66,968	61,660	+ 8.6
Miscellaneous	51	15,599	15,046	+ 3.7
All industries 2/	1,142	160,226	148,332	+ 8.0

1/ Includes the following industries: metals, machinery, and conveyances;
leather and rubber goods; oils and paints; printing and paper goods.

2/ Public utilities, wholesale and retail figures are not included in this total

Compiled from Monthly Review of Business Conditions, Federal Reserve Bank of
San Francisco, November 20, 1935.

Table 30. LOS ANGELES, CALIFORNIA: Index Numbers of employment in manufacturing industries by months, November 1931-1935.

(November 1931 = 100)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Aver.
	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent
1931											100.0	105.4	105.4
1932	96.5	94.6	94.1	93.8	91.5	89.7	87.8	88.8	90.5	90.7	89.0	93.4	91.7
1933	85.3	85.1	81.4	89.0	87.0	89.6	91.8	98.6	105.4	107.2	105.3	108.8	94.5
1934	103.0	107.5	108.0	112.2	111.3	109.6	108.0	109.6	111.9	112.7	112.1	115.9	110.1
1935	112.1	113.2	114.2	112.7	113.4	114.3	113.6	115.5	115.6	116.2	116.6	120.2	114.8

Computed from reports of the Bureau of Labor Statistics, United States Department of Labor.

Table 31. LOS ANGELES, CALIFORNIA: Index numbers of payroll totals in manufacturing industries
by months, November 1931-1935.

(November 1931 = 100)

Year:	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Av.
	:Percent:Percent:Percent:Percent:Percent:Percent:Percent:Percent:Percent:Percent:Percent:Percent:Percent												
1931:											100.0	102.4	
1932:	93.5	90.3	89.8	86.9	85.5	81.1	76.4	76.7	75.6	75.7	72.4	74.5	81.5
1933:	69.9	67.6	61.2	69.1	67.8	72.8	75.4	83.3	89.7	92.3	88.8	90.0	77.3
1934:	86.9	92.0	93.4	98.9	96.6	94.0	93.2	95.6	96.2	96.2	99.0	101.5	95.3
1935:	100.5	102.2	103.7	102.3	103.4	103.5	103.4	105.9	108.3	107.6	108.2	114.6	105.3

Computed from reports of the Bureau of Labor Statistics, United States Department of Labor.

Table 32. Bank debits, specified cities in California, October and
first 10 months 1935, and October and first 10 months,
1934.

City	:	October 1935	:	October 1934	:	First 10 months		
					:	1935	:	1934
	:	Dollars	:	Dollars	:	Dollars	:	Dollars
San Diego	:	41,648	:	29,316	:	404,846	:	292,633
Los Angeles	:	702,867	:	543,645	:	6,513,748	:	5,334,661
San Francisco	:	863,599	:	704,064	:	7,748,924	:	6,795,471
Oakland	:	194,126	:	189,223	:	1,687,484	:	1,640,155
Pasadena	:	22,886	:	17,834	:	209,236	:	179,517
Long Beach	:	29,413	:	23,384	:	288,979	:	226,558
Santa Barbara	:	9,787	:	8,659	:	95,719	:	80,642

Compiled from Monthly Review of Business Conditions, Federal Reserve
Bank of San Francisco, November 20, 1935.

Net sales in six department stores in Los Angeles in October 1935 increased 8.6 percent over October 1934. The increase during the first ten months in 1935 over the like period in 1934 was 9.5 percent. Nine stores in other southern California cities showed increases in net sales of 19.7 and 17.0 percent in October and the first ten months of 1935, respectively, as compared with the like periods in 1934.

The cumulative total of wholesale trade, January-September 1935, in the Twelfth Federal Reserve District showed improvement in ten items of 4.9 to 60.0 percent. There was a decrease in only one item. The index of carloadings was 73 in October 1935 as compared with 62 in October 1934 (1923-1925 average = 100). Although total intercoastal trade declined, there was an increase in westbound intercoastal trade in October 1935 as compared with October 1934. The index of daily average automobile sales (preliminary estimate) was 83 in October 1935, a gain of 12 points over October 1934 (1923-1925 average = 100).

In addition to the California Pacific International Exposition, which has brought temporary increases in business activity, there have been certain developments which should exert a more long-time influence on business conditions in San Diego. The location of a large new airplane factory at San Diego, with Government contracts to fulfill, is counted upon to sustain to some extent the high level of activity attending the Exposition. There are evidences of increased activity in both public and private building. 7/

(2) Distribution of relief milk.

Unemployables are in charge of the County Welfare organization, which organization, in the summer of 1935, was purchasing 150-160 quarts daily, delivery being made directly to the homes by a local dealer. Prices ranged from 9-1/2 to 11 cents per quart, depending upon quantities purchased.

Prior to March 29, 1935, the S.E.R.A. (largest relief organization in San Diego County) contracted for milk through a dealer at 9-1/2 cents per quart, deliveries being made daily to homes. Subsequent to that date the S.E.R.A. began issuing relief checks directly, according to budgeting requirements which are estimated to cover all requirements of necessities, including milk. Consequently, figures are available as to volumes of relief milk only until March 1935. Table 33 presents such fragmentary data as are available relative to the number of relief cases, the number of individual recipients, the volume of relief milk distributed, in San Diego County, and the cost of such milk to the relief organization. In March 1935, the last month in which direct delivery of relief milk was made, 26,316 quarts of milk were distributed among 12,645 relief cases, involving 41,740 individuals, at a cost to the relief organization of $2,500. It was estimated that only approximately 52 percent of this case load was within the San Diego Marketing Area.

7/ Report of Market Administrator, License No. 98.

Table 33. SAN DIEGO COUNTY, CALIFORNIA: Number of relief
recipients, volume of relief milk,
and cost to relief organization,
specified months, 1934-1935.

Year and Month	Cases	Individuals	Volume of relief milk	Cost to relief organization
	Number	Number	Quarts	Dollars
1934				
August			7,932	753.56
September			7,984	758.53
October			13,082	1,242.82
November			21,218	2,015.80
December			23,977	2,277.82
1935				
January	10,538		26,842	2,549.96
February	12,152		26,316	2,500.00
March	12,645	41,740	26,316	2,500.00
April	12,962	43,034		
May	11,988	39,127		
June	11,607	37.737		
July	10,104	34,465		

Compiled from reports of Market Administrator, License No. 98.

(3) Demand as indicated by reported sales of Class I milk.

Table 34 presents the respective volumes of milk in pounds of butterfat in each class according to the pool computations under License No. 98 from February 1935 to November 1935, inclusive. During the months of August and November all milk was included in Class I in the pool computations. During the period June 1 - November 30, 1935, only 862 pounds out of a total of 665,255 pounds of butterfat were reported in the pool computations in Classes III and IV. In this six-month period the percentage of total milk pooled reported in Class I varied between 73.5 in the delivery period June 1-15 to 100 in each of the four delivery periods in August and November. (See Table 35.) Table 36 shows the estimated total sales of butterfat by classes by all handlers, including producer-handlers. The data in Tables 34, 35, and 36 indicate an unusually heavy demand for fluid milk during the six-month period June - November, 1935.

C. Supply conditions.

(1) Location of the San Diego milk supply area.

The major part of the San Diego milk supply is produced in San Diego County. Regular supplies of cream are brought into the marketing area from the Imperial Valley in Imperial County, and frequent shipments of cream and occasionally of milk are received from surplus supplies in the Los Angeles production area. A considerable part of the interior of San Diego County is designated by the United States Census Types of Farming study as non-agricultural.8/ The agricultural area of the County borders the seacoast and centers around the City of San Diego.

(2) Characteristics of the San Diego milk supply area.

According to the Census of Agriculture, in 1929, there were 241 farms in San Diego County listed as dairy farms, the average size of which was 329 acres. (See Table 37.) The inclusion of certain large ranches in the total from which this average was derived, however, gives an incorrect impression of the acreage of typical dairy farms in the vicinity of San Diego. So-called "sand lot" dairying is characterized by small acreages, and herds of 60 to 125 cows may be managed on ranches of less than ten acres.9/ According to the Census, in 1929, the average number of cows per dairy type farm in San Diego County was 32.2. Milk cows constituted 17.6 percent of all cattle in the County. A very small percent of cows on dairy farms were of dual purpose or beef breeding types.

8/ United States Department of Commerce, Census of Agriculture, "Types of Farming in the United States."
9/ Report of Market Administrator, License No. 98.

Table 34. SAN DIEGO, CALIFORNIA: Volume of milk pooled, by classes, by delivery periods, and percent of estimated total milk reported, February through November 1935.

Delivery period	Class I butterfat	Class II butterfat	Class III butterfat	Class IV butterfat	Total pounds butterfat	Percent butterfat pooled is of total butterfat in area.
	Pounds	Pounds	Pounds	Pounds	Pounds	Percent
February 1-15	45,344	10,445	3,125	8,682	67,596	68.7
16-28	39,906	7,684	2,264	9,375	59,229	67.7
March 1-15	46,904	8,771	3,448	9,461	68,584	70.6
16-31	47,898	10,126	3,574	10,024	71,622	61.3
April 1-15	45,609	9,686	4,542	7,098	66,935	59.6
16-30	48,939	11,359	1,533	5,673	67,504	57.4
May 1-15	38,313	11,420	4,140	4,544	58,417	51.4
16-31	41,273	11,432	3,880	4,291	60,876	49.1
June 1-15	40,203	14,192	6	267	54,688	43.9
16-30	45,180	9,305	---	72	54,557	41.9
July 1-15	43,958	11,266	---	101	55,325	44.3
16-31	48,395	10,250	---	64	58,709	44.8
August 1-15	55,933				55,933	45.3
16-31	59,469				59,469	42.6
September 1-15	43,353	11,266	21	63	54,703	43.4
16-30	42,481	9,505	20	68	52,074	43.1
October 1-15	39,413	12,867	16	68	52,364	43.4
16-31	46,609	10,622	32	64	57,327	43.3
November 1-15	54,993				54,993	45.3
16-30	55,133				55,133	47.9

Data compiled from reports of the Market Administrator, License No. 98.

Table 35. SAN DIEGO, CALIFORNIA: Net sales of Class I, Class II, Class III, and Class IV butterfat, and percentage in each class, semi-monthly, February 1 -- November 30, 1935.

Year and Month	Net Sales					Percentage in each class			
	Class I : Pounds	Class II : Pounds	Class III : Pounds	Class IV : Pounds	Total : Pounds	Class I : Percent	Class II : Percent	Class III : Percent	Class IV : Percent
1935									
Feb. 1-15	45,344.29	10,445.51	3,124.56	8,681.76	67,596.12	67.10	15.50	4.60	12.80
16-28	39,906.40	7,683.58	2,264.04	9,374.66	59,228.68	67.40	13.00	3.80	15.80
Mar. 1-15	46,904.37	8,771.24	3,447.41	9,460.92	68,583.94	68.40	12.80	5.00	13.80
16-31	47,898.44	10,125.48	3,574.00	10,024.06	71,621.98	66.90	14.10	5.00	14.00
Apr. 1-15	45,608.82	9,686.25	4,542.47	7,097.68	66,935.22	68.10	14.50	6.80	10.60
16-30	48,938.57	11,359.47	1,532.80	5,672.92	67,503.76	72.50	16.80	2.30	8.40
May 1-15	38,313.26	11,419.69	4,140.22	4,544.22	58,417.39	65.60	19.50	7.10	7.80
16-31	41,272.99	11,431.31	3,880.27	4,291.02	60,875.59	67.80	18.80	6.40	7.00
June 1-15	40,203.53	14,192.21	5.61	267.07	54,668.42	73.50	26.00	--	.50
16-30	45,179.64	9,304.79	--	72.41	54,556.84	82.80	17.00	--	.20
July 1-15	43,958.35	11,265.90	--	101.07	55,325.32	79.40	20.40	--	.20
16-31	48,395.05	10,250.10	--	63.40	58,708.55	82.40	17.50	--	.10
Aug. 1-15	55,932.78	--	--	--	55,932.78	100.00	--	--	--
16-31	59,468.57	--	--	--	59,468.57	100.00	--	--	--
Sept. 1-15	43,352.85	11,265.91	20.80	63.07	54,702.63	79.25	20.59	.04	.12
16-30	42,481.38	9,505.54	19.61	67.77	52,074.30	81.58	18.25	.04	.13
Oct. 1-15	39,413.20	12,866.90	16.42	67.74	52,364.26	75.27	24.57	.03	.13
16-31	46,608.74	10,622.14	32.16	63.95	57,326.99	81.30	18.53	.06	.11
Nov. 1-15	54,992.81	--	--	--	54,992.81	100.00	--	--	--
16-30	55,133.49	--	--	--	55,133.49	100.00	--	--	--
Dec. 1-15									
16-31									

Compiled from reports of the Market Administrator, License No. 98.

Table 36. SAN DIEGO, CALIFORNIA: Total estimated sales of butterfat, including producer-handlers sales, by classes, semi-monthly, February 1 – November 30, 1935.

Year and Month:	Class I	Class II	Class III	Class IV	Total	Percentage of total in each class			
						Class I	Class II	Class III	Class IV
1935	Pounds	Pounds	Pounds	Pounds	Pounds	Percent	Percent	Percent	Percent
Feb. 1-15	65,529.07	14,857.19	3,935.68	14,070.05	98,391.99	66.6	15.1	4.0	14.3
16-28	58,048.92	11,802.11	3,496.92	14,075.12	87,423.07	66.4	13.5	4.0	16.1
Mar. 1-15	66,708.57	12,720.26	4,175.35	13,497.08	97,101.26	68.7	13.1	4.3	13.9
16-31	68,443.81	22,425.28	10,278.25	15,650.97	116,798.31	58.6	19.2	8.8	13.4
Apr. 1-15	64,558.07	21,219.95	13,023.89	13,472.99	112,274.90	57.5	18.9	11.6	12.0
16-30	67,982.41	23,523.33	13,643.53	12,467.36	117,616.63	57.8	20.0	11.6	10.6
May 1-15	63,063.79	22,612.06	14,885.33	13,067.27	113,628.45	55.5	19.9	13.1	11.5
16-31	68,621.70	26,431.15	15,635.32	13,401.71	124,089.88	55.3	21.3	12.6	10.8
June 1-15	69,076.79	31,240.14	14,935.52	9,210.24	124,462.69	55.5	25.1	12.0	7.4
16-30	74,138.02	34,857.88	13,787.07	7,283.74	130,066.71	57.0	26.8	10.6	5.6
July 1-15	71,635.72	32,323.43	14,601.71	6,240.04	124,800.90	57.4	25.9	11.7	5.0
16-31	74,134.05	45,056.73	8,906.56	2,881.54	130,978.88	56.6	34.4	6.8	2.2
Aug. 1-15	84,586.46	17,164.26	12,842.32	8,890.84	123,483.88	68.5	13.9	10.4	7.2
16-31	96,252.41	21,342.93	12,833.65	9,067.26	139,496.25	69.0	15.3	9.2	6.5
Sept. 1-15	74,562.00	32,676.09	9,462.19	9,462.19	126,162.53	59.1	25.9	7.5	7.5
16-30	74,127.53	28,492.01	9,296.12	8,813.21	120,728.87	61.4	23.6	7.7	7.3
Oct. 1-15	71,966.02	27,651.37	12,074.83	9,056.13	120,748.35	59.6	22.9	10.0	7.5
16-31	81,441.75	26,749.97	13,242.56	10,991.33	132,425.61	61.5	20.2	10.0	8.3
Nov. 1-15	89,306.29	10,692.45	12,879.55	8,626.86	121,505.15	73.5	8.8	10.6	7.1
16-30	85,143.02	6,558.32	7,363.72	15,993.08	115,058.14	74.0	5.7	6.4	13.9

Compiled from reports of the Market Administrator, License No. 98.

Table 37. Type and size of farm, size of herd and type of cattle enterprise in selected areas which include the San Diego milk supply area, 1929.

State and County	Percent of farms of dairy type: Percent	Size of farm: Acres	Size of dairy type farms: Acres	Number of milk cows: Per farm reporting milk cows: Number	Number of milk cows: Per dairy type farm: Number	Percent milk cows are of all cattle: Percent	Percent milk cows of dual purpose and beef breeding are of all cows milked: On all farms: Percent	Dairy farms: Percent
California:								
San Diego	6.2	214	329	8.3	32.2	17.0	5.0	1.8
Imperial	17.7	127	86	18.9	33.3	36.2	2.7	2.6
Riverside	2.4	134	152	5.8	34.3	29.5	3.9	2.1
Orange	2.4	58	53	9.6	39.4	27.8	4.4	3.2
Los Angeles	6.6	42	45	27.7	52.5	60.6	6.3	6.3
San Bernardino:	3.3	42	80	15.0	43.2	33.9	5.7	5.8
Ventura	1.8	268	83	5.4	34.6	17.6	8.6	13.4
Santa Barbara	8.8	758	471	14.2	47.9	16.8	8.4	3.1
Kern	8.3	712	240	6.7	25.3	9.3	9.0	5.5
San Luis Obispo:	20.9	763	486	17.6	39.3	22.9	9.5	5.8
The State	11.2	224	178	11.2	29.0	28.1	7.0	4.6

Compiled from the Fifteenth Census of the United States, 1930, Bureau of the Census.

It was testified by the County Agent at the hearing held December 18, 1934, that there had been a small decrease in dairying in San Diego County since 1930.[10]/ Production in 1934, according to reports of the California State Department of Agriculture, however, was higher than in 1931-1933, 2,422,051 pounds of butterfat being produced in 1934 as compared with 2,104,448 pounds in 1931, 2,340,847 pounds in 1932, and 2,298,237 pounds in 1933. (See Table 38.) Production in 1929, according to the Census, was 62,998,190 pounds of milk, or, in terms of 4 percent butterfat in milk, 2,511,940 pounds of butterfat. If a lower butterfat content is assumed, however, production in 1929 would appear to have been on about the same level, in which case the evidence cited above of declining production from 1930 to 1934 does not seem to be conclusive.

In 1929 the production of milk per cow in California was 6,450 pounds; in 1932, 6,600 pounds.[11]/ The data in Table 39 indicate that in 1929 production per cow on dairy type farms in San Diego County was 6,758 pounds as compared with 6,958, the average for the State. Daily milk production per herd on dairy type farms in San Diego County was 596.5 pounds in 1929. (See Table 39.) Figures submitted to the County Agent by the Dairymen's League of San Diego County indicated that in December 1934 the average production per dairy farm per day was 116 gallons, or 997.6 pounds.[12]/ This, of course, represented a selected group of herds rather than the county average.

The principal feed used in the production of milk in the San Diego area is alfalfa hay, which is purchased in large quantities from the Imperial Valley and from Arizona.[13]/ Table 39 indicates that in 1929 the average expenditure for feed per dairy farm in San Diego County was $3,562.80. Production under conditions prevailing in the San Diego area tends to be much less seasonal in character than in areas where more dependence is placed upon pasture. There is a season of heavier production, however, which extends through the late winter and early spring months, and a short season which begins in the hot weather of summer and reaches the lowest level in the late summer and fall months.[14]/ There are ordinarily two peaks in the demand for milk in the San Diego Marketing Area; in the summer months—July and August—and in the latter part of the winter. In addition, there is an irregular demand factor in the coming and going of the Fleet. Seasonality and irregularity of demand, therefore, constitute a significant factor in relation to the classification and price structure of the market. Inasmuch as the heaviest demand usually is in the summer months, shortages apparently are more likely to occur in July and August, due to the downward trend in production at that time.

10/ A.A.A. Docket No. L-46, Hearing on Proposed License for Milk, San Diego, California, p. 66.

11/ Statistical Supplement to Milk Production Trends, No. 8, May 1933, Division of Crop and Livestock Estimates, Bureau of Agr. Economics.

12/ A.A.A. Docket No. L-46, p. 66.

13/ Report of Market Administrator, License No. 98.

14/ October and November tend to be the lowest months in production, A.A.A. Docket No. L-46, p. 285.

Table 38. SAN DIEGO AND IMPERIAL COUNTIES, CALIFORNIA: Estimated total
production of butterfat and
estimated production of
specified dairy products,
1931-1934.

Dairy product	Year	County	
		San Diego	Imperial
Pounds of butterfat produced	1931	2,104,448	5,374,542
	1932	2,340,847	5,473,523
	1933	2,298,237	5,948,053
	1934	2,422,051	4,570,750
Gallons of Commercial milk processed and bottled	1931	4,683,840	735,632
	1932	4,863,708	652,534
	1933	4,682,562	629,194
	1934	4,976,967	613,310
Pounds of butter Manufactured	1931	852,167	4,089,183
	1932	663,885	4,772,732
	1933	779,537	5,551,198
	1934	169,859	4,267,280
Pounds of cheese manufactured	1931	29,935	398,973
	1932	13,255	711,338
	1933	12,360	1,084,329
	1934	11,978	1,294,774
Gallons of ice cream Manufactured	1931	625,513	16,349
	1932	452,083	8,826
	1933	479,239	8,235
	1934	472,559	9,440

Compiled from "Statistical Report of California Dairy Products", 1931,
1932, 1933, and 1934, California State Department of Agriculture.

Table 39. Total production, production per square mile per cow and daily per herd, and expenditure for feed per farm in selected areas in the San Diego milk supply area, 1929.

State and county	Total Milk produced	Milk Produced per square mile	Milk production per cow		Milk produced daily per herd		Annual expenditure for feed per farm	
			All farms	Dairy farms	All farms	Dairy farms	All farms	Dairy farms
	Pounds	Pounds	Pounds	Pounds	Pounds	Pounds	Dollars	Dollars
California:								
San Diego	62,798,490	14,878	6,312.7	6,758.1	144.2	596.5	1,004.50	3,562.80
Imperial	139,543,187	34,126	5,756.5	6,098.6	297.5	557.0	571.01	493.22
Riverside	38,950,097	5,393	6,187.5	7,062.5	98.4	663.3	720.80	3,970.10
Orange	48,528,579	61,042	7,843.6	8,359.5	207.1	901.7	783.41	5,928.99
Los Angeles	405,977,250	98,658	8,628.8	8,772.2	655.4	1,261.6	1,926.46	9,247.53
San Bernardino	84,762,572	4,201	6,997.1	7,231.2	288.1	856.1	1,336.37	5,338.46
Ventura	17,329,980	9,327	6,297.2	7,183.0	93.3	681.6	721.11	3,831.46
Santa Barbara	61,460,674	22,431	6,157.8	7,214.1	239.9	947.6	702.48	2,036.22
Kern	52,982,201	6,620	6,282.7	7,237.2	115.0	500.8	514.73	1,013.08
San Luis Obispo	96,297,520	28,883	4,680.8	4,775.1	225.7	514.1	592.57	491.08
The State	3,831,558,077	24,616	6,493.7	6,957.9	198.8	552.9	810.38	1,661.50

Compiled from the Fifteenth Census of the United States, 1930, Bureau of the Census.

The methods used in production in the San Diego area should be conducive to rather prompt responses to changes in the profitableness of dairying, but it is not clear that the relatively low prices received by producers in 1933 and 1934 had any marked effect on total production. Testimony was presented at the hearing, December 18, 1934, to the effect that, while certain wholesale producers had gone out of business, there had been a tendency for their herds to be merged with other existing herds. 15/

(3) Utilization of milk in the San Diego supply area and nearby areas.

The disposition of milk produced on farms in San Diego County, in other southern California counties, and in the State of California is shown in Table 40. In San Diego County, out of 52,469,658 pounds of milk produced on dairy farms in 1929, 48,184,063 pounds were sold as whole milk. With the exception of Imperial and Kern Counties, the other southern California counties listed disposed of a similarly high percentage of the milk produced on dairy farms as whole milk.

(4) Producers' marketing organizations.

There are two producers' associations, the Milk Producers' Association, Inc., and the Dairymen's League of San Diego County. The former, incorporated June 14, 1917, was the only association in the market until 1932, when a group of independent wholesale producers, who were supplying approximately 40 percent of the milk in the market, organized the Dairymen's League. The two associations, then, controlling approximately 80 percent of the total volume of milk in the San Diego County, formed the San Diego Milk Pool in the fall of 1932. Experience in organized marketing was gained in the operation of this pool. The producers associated in its operations controlled approximately 95 percent of the wholesale sales by producers in the market and adopted a policy of furnishing dealers with the exact quantities of fluid milk required and of partially processing milk to be used for other purposes so that, in addition to performing a valuable service to handlers, they were assured that there was little question that milk reported as used in lower classes was actually so used.

Table 41 shows that members of the producers' co-operative associations supplied 82.9 percent of the total quantity of milk pooled during the eleven-month period February 1935-December 1935. In December 1935 members of the association supplied 86.9 percent of the total quantity pooled, which was the largest percentage supplied by association members during any month in the eleven-month period.

15/ A.A.A.Docket No. L-46, p. 125.

Table 40. Disposition of milk produced on farms in selected areas in the San Diego milk supply area, 1929.

State and county	Total milk produced		Whole milk sold		Sold from all farms	Farm butter Milk equivalent
	All farms Pounds	Dairy farms Pounds	All farms Pounds	Dairy farms Pounds	Pounds	Pounds
California:						
San Diego	62,998,490	52,469,658	50,934,558	48,184,063	18,596	386,225
Imperial	139,543,187	114,459,068	52,419,494	46,371,209	15,878	329,774
Riverside	38,950,097	27,600,350	28,178,777	25,611,110	18,966	393,909
Orange	48,528,579	38,838,142	42,500,452	36,159,577	3,952	82,080
Los Angeles	405,977,250	384,974,803	389,723,319	374,831,146	3,093	64,239
San Bernardino	84,762,572	73,121,913	76,452,220	69,490,958	13,802	286,657
Ventura	17,329,980	7,463,089	11,989,028	5,448,496	2,463	51,155
Santa Barbara	61,460,674	42,887,51	34,632,776	31,036,764	9,419	195,605
Kern	52,982,201	36,555,246	30,843,926	26,103,855	1,982	41,165
San Luis Obispo	96,297,520	75,432,853	11,963,099	11,227,128	2,216	46,025
The State	3,831,558,077	3,063,504,418	2,555,192,870	2,306,411,674	292,211	6,068,998

Compiled from the Fifteenth Census of the United States, 1930, Bureau of the Census.

Table 40 (Continued): Disposition of milk produced on farms in selected areas in the San Diego milk supply area, 1929.

State and county	Cream sold			Cream sold as butterfat				Milk used on all farms
	From all farms	Milk equivalent	Butterfat	From all farms		From dairy farms		
				Milk equivalent	Butterfat	Milk equivalent	Butterfat	
	Pounds	Pounds	Pounds	Pounds	Pounds	Pounds	Pounds	Pounds
California:								
San Diego	73,357	470,237	110,792	2,840,821	82,560	2,116,923		8,166,649
Imperial	4,570	29,295	2,889,395	74,087,051	2,364,486	60,627,846		12,677,573
Riverside	136,760	876,667	110,124	2,823,692	19,048	488,410		6,677,052
Orange	8,106	51,962	79,398	2,035,846	73,042	2,001,077		3,858,239
Los Angeles	272,336	1,745,744	195,117	5,003,000	192,027	4,923,769		9,440,948
San Bernardino	439,639	2,818,199	49,575	1,271,154	46,975	1,204,487		3,934,342
Ventura	29,123	186,686	63,419	1,626,128	62,585	1,604,744		3,476,983
Santa Barbara	201,407	1,291,071	791,778	20,302,000	414,497	10,628,128		5,039,202
Kern	23,402	150,013	553,515	14,192,692	350,197	8,979,410		7,754,405
San Luis Obispo	175,140	1,122,692	2,853,187	73,158,641	2,255,860	57,842,564		10,007,063
The State	3,959,970	25,384,423	35,047,585	898,656,025	24,523,415	628,805,512		346,255,761

Compiled from the Fifteenth Census of the United States, 1930, Bureau of the Census.

Table 41. SAN DIEGO, CALIFORNIA: Volumes and percentages of total milk
pooled by members and nonmembers of Cooperative
Milk Producers' Associations in the San Diego
Marketing Area, February 1935-December 1935.

Year and month	Members of Cooperative Milk Producers' Associations	Percent of total milk pooled	Producers not members of the associations	Percent of total milk pooled	Total milk pooled
	Pounds of B. F.	Percent	Pounds of B. F.	Percent	Pounds B.F.
1935					
February	101,507.95	80.0	25,316.85	20.0	126,824.80
March	105,564.40	75.3	34,641.52	24.7	140,205.92
April	101,008.29	75.1	33,430.69	24.9	134,438.98
May	99,757.30	83.6	19,535.48	16.4	119,292.98
June	94,023.86	86.1	15,201.40	13.9	109,225.26
July	97,108.44	84.6	17,651.71	15.4	114,760.15
August	98,689.70	84.9	17,607.44	15.1	116,297.14
September	91,787.14	86.0	14,989.79	14.0	106,776.93
October	95,239.18	86.8	14,452.07	13.2	109,691.25
November	94,813.22	86.1	15,313.08	13.9	110,126.30
December	100,308.02	86.9	15,058.39	13.1	115,366.41
Total (11 months)	1,079,807.70	82.9	223,198.42	17.1	1,303,006.1

Compiled from reports of the Market Administrator, License No. 98.

(5) Handlers in the San Diego Marketing Area.

During the period in which License No. 98 has been effec-
tive a total of 9 handlers and 43 producer-handlers have operated in
the San Diego market.[17] According to information furnished by the Mar-
ket Administrator, 9 of the 43 producer-handlers were operating pas-
teurizing plants. Approximately 40-45 percent of the milk in the San
Diego market is handled by handlers who are not also producers, and
55-60 percent by producer-handlers.

A handler's organization, known as the Milk Institute of
San Diego County, an unincorporated body, simply organized, and serv-
ing the purpose mainly of considering trade practices and advertising
campaigns, had been functioning for some time prior to the hearing on
a proposed license, held December 18, 1934.[18]

(6) Transportation of milk, San Diego Marketing Area.

A small percentage of the supply is hauled by the produc-
ers who produce it, but the greater part is hauled by trucking compan-
ies, who are franchised carriers under the control of the Railroad Com-
mission of the State of California. Rates charged are fixed by the
Commission.[19] No distributors in the area operate hauling services
and shippers apparently are unrestrained in selecting their transpor-
tation services.[20] Certain rates in effect as of December 1934, are
as follows:[21]

	Miles distant	Rate per 10 gallon can
		Cents
San Luis Rey	43	35
Santa Ysabel	45	25
Ramona	38	15
Escondido	35	$17\frac{1}{2}$
Lakeside	21	10
El Cajon	15	10
Sweetwater	11	$12\frac{1}{2}$
Oceanside	40	35
El Monte	28	16

As of September 1935 the following rates were charged for haul-
ing cream from specified sources of supply: To San Diego from Los An-
geles, 25 cans or more, including refrigeration and return of empty
cans, 26.9 cents per can; to San Diego from El Centro, 25 cans or more,
including return of empty cans, not including refrigeration (shipper
could ice at own expense) 37 cents per can.

---

[17] Report of Market Administrator, License No. 98
[18] A.A.A. Docket No. L-46, p. 211.
[19] A.A.A. Docket No. L-46, p. 248, and report of Market Administrator,
      License No. 98.
[20] Brief submitted by Felix M. Landis, A.A.A. Docket No. L-46.
[21] Ibid.

(7) Sanitation regulations.

Sanitary control of milk and cream is a responsibility of
the California State Department of Agriculture. All milk produced in
San Diego County, and all milk offered for sale in that county, must be
produced under conditions that are described in the Agricultural Code
of the State as constituting Grade-A raw milk, plus the additional re-
quirement that all milk sold in the San Diego area must be produced in
a county that is legally a tuberculosis-free area under State law.

In accordance with the State law, the following grades of
milk have been sold in San Diego County: Certified, Guaranteed, Grade-A
raw and Grade-A pasteurized. Table 42 shows the requirements for each
grade of milk. The minimum butterfat content of market milk for con-
sumption in the city of San Diego is 3.5 percent and the minimum solids-
not-fat requirement is 8.5 percent. The minimum butterfat content re-
quirements for table cream is 18 percent; whipping cream, 26 percent;
and the solids-not-fat requirement for Grade-A cream is 8.05 percent.

The dairy score of Grade-A cream is required to be not less
than 70 percent on the "Dairy Farm Score Card." Milk for Grade-A cream
must be produced from tuberculin tested cows, and must be delivered to
the plant within four hours after milking. The building requirements,
however, are not so stringent as those for Grade-A milk. The bacteria
limit is 150,000, or three times that provided for Grade-A milk. Milk
may not be brought into San Diego County and then separated for market
cream, but milk meeting all of the requirements of the San Diego health
ordinance may come in from outside areas.

(8) Supply and demand conditions of immediate significance in
relation to the prices provided by the proposed marketing
agreement.

As has already been shown, the San Diego marketing area
has experienced unusually heavy demands for fluid milk and cream during
the past several months. Reopening of the California Pacific Interna-
tional Exposition on February 12, 1936, should draw more than the usual
number of tourists and sight-seers and thereby increase the demand for
milk. Improvement in employment and business conditions is expected to
take place during the coming months, which should have a similar stimu-
lating effect on demand.

On the supply side, the most significant development in re-
cent months has been the tuberculosis eradication program, which has had
the effect of removing from production a large number of cows in San
Diego County, necessitating that producers go to considerable expense
for replacements. Associated with the removal of tubercular cows from
herds, also, has been the tendency toward higher average butterfat con-
tent of milk delivered to the San Diego market. The result of the lat-
ter has been to place a premium upon skim milk by creating a skim milk
shortage.

Table 42. Sanitary requirements for market milk in San Diego County

Grade of milk	Minimum score on dairy farm score card	Maximum bacteria per c. c. when delivered to consumer	Maximum bacteria per c. c. before pasteurization	Cooled to degrees F.	Other regulations
Cows free from diseases: as determined by					
Certified Raw : Physical examination once a month and tuberculin test every six months	not fixed	10,000	—	50°	Produced and handled according to the rules of the Amer. Assoc. of Med. Milk Commissions and certified by Milk Commission of County Medical Society
Guaranteed Raw : Physical examination once a month; tuberculin test	90 percent	25,000	—	50°	Shall be bottled on premises where produced; pouring lip of container must be completely protected
Grade - A Raw : Physical examination every two months; tuberculin test	80 percent	50,000	—	50°	Bottled on ranch
Grade - A Pasteurized : Physical examination every six months; tuberculin test	80 percent	15,000	50,000	After pasteurization: 50° 60° before pasteurization	Shall be bottled only in plant where pasteurized

In all grades the container must be marked with the grade and whether raw or pasteurized.
Adapted from Agricultural Statutes of the State of California - Dairy Laws.

The prices of most commercial feedstuffs, as reported on the Los Angeles market, were considerably lower in the fall of 1935 than in the fall of 1934. (See Table 43.) According to United States Department of Agriculture estimates, as published in Crops and Markets, December 1935, alfalfa hay production in California and Arizona increased in 1935 as compared with 1934. California production of alfalfa hay in 1935, however, was below the five-year average, 1928-1932. The November 1935 price of No. 1 alfalfa hay at Los Angeles was $16.00 per ton, as compared with $17.30 in November 1934. It would appear, therefore, that current feed prices would tend to be a stimulating, rather than a depressing, factor in any possible increase in milk production which might take place in the San Diego production area.

/ Table 43 - Los Angeles, California, Average feedstuff prices per ton, bagged in car lots, by months, 1934 - 1935.

Year and Month	Wheat mixed feed	Linseed meal (34%)	Cottonseed Meal (41%)	No. 1 alfalfa meal (fine)	Dried Beet Pulp	Soybean Meal	Copra Meal
	Dollars	Dollars	Dollars	Dollars	Dollars	Dollars	Dollars
1934							
January	16.50	28.60	23.00	20.85 1/	16.50	29.00	16.90
February	16.05	28.75	24.00	19.95 1/	16.40	29.05	16.70
March	16.75	28.90	24.00	18.65 1/	15.90	29.25	--
April	18.95	27.40	24.25	18.65 1/	15.50	28.40	16.50
May	19.80	26.55	24.30	19.70 1/	14.60	28.25	17.30
June	27.50	26.80	24.50	20.00 1/	16.25	28.50	18.75
July	26.25	27.55	24.50	21.05 1/	17.40	28.85	19.70
August	25.65	28.90	27.70	22.75 1/	19.75	31.30	23.25
September	26.25	32.95	31.75	25.25 1/	24.75	32.25	25.50
October	26.00	--	33.65	25.60 1/	29.50	32.45	25.30
November	25.15	33.90	34.90	26.00 1/	30.50	31.55	25.25
December	26.90	34.50	34.80	24.60 1/	30.50	33.65	26.10
1935							
January	28.00	35.15	35.15	23.15 1/	30.50	32.65	28.00
February	28.40	35.00	35.00	21.50 1/	30.00	30.75	28.00
March	28.55	34.15	32.80	21.00 1/	29.00	30.90	23.80
April	30.20	33.50	31.55	21.50 1/	29.00	32.13	23.00
May	32.75	32.81	31.25	22.00	27.50	30.00	24.00
June	30.00	29.23	30.00	21.50 1/	26.00	30.25	23.13
July	26.90	28.25	29.10	20.95 2/	19.50	30.60	22.25
August	23.69	27.06	26.00	18.75	18.50	31.63	22.44
September	21.54	25.50	24.00	19.32	21.00	29.63	22.31
October	22.05	26.30	24.80	20.95	23.10	33.40	23.40
November	21.50	26.00	24.00	22.13	24.25	33.25	24.00
December							

Compiled from "Crops and Markets" Bureau of Agricultural Economics, Division of Dairy and Poultry Products.

1/ Medium   2/ Leaf Meal

D. Conclusions relative to the proposed minimum prices to producers.

(1) The Class I price.

Available information, as set forth in the preceding pages, tends to support the conclusion that the Class I price of 64 cents per pound butterfat, which has been in effect under the terms of License No. 98 since June 19, 1935, has tended toward the maintenance of an adequate supply of milk, but has not had the effect of unduly stimulating production. While the market has been enjoying a period of unusually heavy demand, the presence of certain obviously temporary factors in this demand, appears to justify the continuation of the Class I price on the existing level.

(2) The Class II price.

The proposal of a Class II price equal to the f.o.b. market "Grade A" cream price has been made possible by the establishment of a cream price reporting service by the United States Department of Agriculture. Considerable volumes of "Grade A" cream are received regularly from outside the San Diego production area. (See table 44.) Under the terms of License No. 98 and agreements supplementary thereto the effort has been made to maintain the price of Class II milk in the proper relationship to "Grade A" cream. This purpose is definitely accomplished by the proposed Class II price formula. In most markets skim milk is not generally regarded as valuable enough to cover the cost of processing milk into cream, but the recent heavy demand for skim milk in the San Diego market indicates that handlers should be well able to take any local surplus over fluid milk requirements in preference to "Grade A" cream received from other areas as cream.

In recent months the margin over the butter price which has been paid for "Grade A" cream f.o.b. the market has been somewhat wider than in 1933 and 1934. This has tended to reduce the differential between the price of Class II milk and the price of Class I milk, notably by an agreement among handlers which, since July 1935, has caused Class II milk to be paid for at the same prices per pound butterfat as "Grade A" cream. Should local milk supplies increase markedly, or should demand decline so that the surplus over fluid milk requirements assume significant proportions, there is a possibility that the Class II formula might have to be changed. Present conditions indicate, however, that it should be possible to maintain for some time Class II price equal to the "Grade A" cream price, per pound butterfat.

(3) The Class III price.

As in the case of Class II milk, there has been an effort in the past to maintain the price of Class III milk in a competitive relationship with "Grade B", or manufacturing, cream. At times when the prices of Class II and Class III milk have become high in relation to "Grade A" and "Grade B" cream prices, respectively, local producers have tended to lose in the competitive struggle with cream producers in near-by cream producing areas. Consequently the proposed formula will accomplish exactly, what heretofore has been accomplished imperfectly, by price

Table 44. Volumes of milk and grade "A" cream received in the
San Diego, California, market, from outside the
San Diego production area by months, February to
December, 1935.

Month	Milk Pounds butterfat	Grade "A" cream Pounds butterfat
February		15,847.62
March		20,483.18
April		20,499.37
May		16,985.31
June	2,114.95	35,913.95
July	179.15	40,587.31
August	6,519.65	42,961.35
September	7,532.18	34,073.52
October	9,984.98	24,748.68
November	1,991.76	19,715.80
December		13,685.48

Compiled from report of the Market Administrator, License No. 98.

formulae based on the price of 92-score butter in the Los Angeles market.

As in the case of the "Grade A" cream price, the "Grade B" price margin over the price of 92-score butter has recently been somewhat wider than in 1933 and 1934.

The proposed minimum price schedule in conjunction with the proposed classification, constitute a pricing arrangement which appears reasonable in relation to the available information concerning current supply and demand conditions in the San Diego market. Necessary caution is being observed, it is believed, with respect to the probably temporary character of the highly stimulated demand situation. This element of caution is apparent in the proposal to continue the Class I price on the same level as that existing and to relate Class II and Class III prices directly to the prices of cream on the open market.

Other Provisions of the Proposed Marketing Agreement
for the San Diego Marketing Area

A. Terms defined by the proposed marketing agreement.

"Person" means any individual, partnership, corporation, associa-
tion, or any other business unit. In the milk industry, practically
all types of business organization are to be found. Hence, it is neces-
sary that all possible types of business organization be specified and the
proposed marketing agreement be made applicable thereto.

"Producer" means any person, irrespective of whether such person
is also a handler, who produces milk in conformity with, or subject to,
the health requirements applicable for milk to be sold for consumption as
milk in the San Diego Marketing Area. Milk which does not meet these re-
quirements cannot legally be sold as milk in the San Diego Marketing
Area, hence the handlers of such milk should not be parties to any agree-
ment relating to such milk. But all milk which meets the health require-
ments is in actual or potential competition with all other such milk, and
handlers of such milk must be parties to any agreement for such to be
effective in regulating the handling of such milk.

"Handler" means any person, irrespective of whether such person
is a producer or an association of producers, wherever located or operat-
ing, who engages in such handling of milk, which is sold as milk or cream
in the marketing area, as is in the current of interstate or foreign com-
merce, or which directly burdens, obstructs, or affects interstate or
foreign commerce in milk and its products.

One of the major objectives of this proposed marketing agreement
is to place all handlers on a comparable basis with respect to the
minimum purchase price they are required to pay for milk sold in the
several use classes. In order to do this, all competitive factors in
the market must be directed in a rational manner so that the market oper-
ates efficiently and losses engendered by unrestrained, unfair competi-
tion are eliminated. In order that this major purpose may be accomplish-
ed, all persons involved in the handling of milk and its products in
interstate commerce, or so as to burden, obstruct, or affect interstate
commerce, should be parties to the agreement. All types of business
setups and organizations are found. Hence, the definition of a handler
must be broad enough to include all those persons who are in competition
with each other so that no provision of the proposed agreement would be
discriminating in effect with respect to different firms or persons.

B. Market Administrator and provisions relating thereto.

Selection, removal and bond. In order that the Secretary can be assured that the administration of the proposed marketing agreement is being carried out without any bias in favor of or against any group in the San Diego Marketing Area, it is necessary that he appoint the Market Administrator. This procedure is followed in all Federal milk licenses, due to the fact that it proved more feasible than other types of administrative organization. The person selected needs to be one of wide experience and one with complete understanding of the marketing system provided by the proposed marketing agreement. In order further to insure unbiased administration of the proposed agreement, it is necessary that the Market Administrator, selected by the Secretary, be subject to removal by the Secretary and only by the Secretary. For further assurance to all concerned of the faithful and honest performance by the Market Administrator of his duties, the Market Administrator is required to execute and deliver to the Secretary a bond in such amount as the Secretary may determine, with surety thereon satisfactory to the Secretary.

Compensation. The Secretary, who selects the Market Administrator, should also be the one to determine a reasonable compensation for the Market Administrator he selects. The Market Administrator being necessary for the proper administration of the proposed marketing agreement, his salary is considered an expense of administration.

Duties. In order that there shall be proper administration of the proposed marketing agreement, the Market Administrator must:

1. Keep such books and records as will clearly reflect the financial transactions provided for in the proposed marketing agreement. In order for the Secretary to be assured, and to assure producers and handlers of proper administration of the proposed marketing agreement, the books and records of the Market Administrator must be subject to his examination at any and all times. Only by being so assured can the Secretary know definitely that the agreement is effectuating the policy of Congress as stated in the Agricultural Adjustment Act.

2. In order for the Secretary to be informed, furnish such information and verified reports as the Secretary may request.

3. In order to assure that his duties, for which the Secretary is responsible, are being properly carried out by his employees, obtain a bond for each employee who handles funds entrusted to the Market Administrator under the provisions of the proposed marketing agreement. Most of the money handled in the Administrator's office belongs to handlers or producers, and the bond would cover possible losses to them. This insurance being necessary to the proper administration of the agreement, the expense of such bond should be a part of the expense of administration.

4. Publicly disclose, except as otherwise directed by the Secretary, the name of any person who has not:

(a) Made reports pursuant to article V of the proposed marketing agreement. These reports are the only way in which the Market Administrator can determine in a reasonable length of time sales made by each handler in each class, etc. These reports are necessary in order that prices to producers be computed by the Market Administrator and the purpose of the proposed marketing agreement be effectuated. If the handler pays his producers without filing these reports, other handlers and also the producers should be informed that that handler had not filed reports and that the Market Administrator could not determine if the handler had paid the correct price for his milk. If the producers are not so informed, they might assume that they had been paid the correct price. The Market Administrator must make it known that he had not verified the prices paid and, therefore, was not responsible for its correctness.

(b) Made payments pursuant to article VIII of the proposed marketing agreement. The Market Administrator obtains information to compute the price that shall be paid by each handler and also obtains information as to what price was paid. With no notice to the contrary, a producer might assume that the price he received was the one to which he was entitled, when in fact it might be different from what the Market Administrator had computed as being correct. Because the producer might make such an incorrect assumption, the Market Administrator must notify such producer that the prices paid by the handler were not those computed by the Market Administrator. All handlers will be in the same competitive position only if they pay the price as computed by the Administrator. The other handlers in the market, in order to be on equal competitive terms, must know the names of those competitors who have not paid the same price for milk as they have.

C. Inter-handler sales. (Section 2 of article III of the proposed marketing agreement.)

Article III, section 2,22/ provides that milk sold by a handler to another handler shall be presumed to be Class I milk unless the selling handler submits satisfactory proof to the Market Administrator that such milk was sold, used, or distributed by the purchasing handler other than as Class I, in which case such milk shall be classified accordingly. It is one of the fundamental objectives of the proposed marketing agreement that all handlers shall pay uniform prices for their milk according to the use to which it is put.

The routes of milk from producer to consumer are so intricate and varied that as a practical necessity the sale of milk must be classified at some focal point in the routes. In this way only can the Market Administrator be sure that some handlers are not purchasing milk at Class II or Class III prices and using it as Class I milk. Provision is also made that milk sold by a handler to another handler for uses other than Class I shall be priced in accordance with such uses.

22/ For discussion of the classification provided in the proposed marketing agreement, see Part V.

D. Equalization of fluid milk sales among producers.

The use plan of payment for milk puts all handlers in the market on an equitable competitive basis, and equalization of fluid milk sales is intended to do the same thing for all producers. Equalization of fluid milk sales is simply an extension of a plan that has been commonly employed by handlers and cooperative creameries. If a cooperative creamery sells 75% of its milk as whole milk and the remainder as cream, it does not pay 75% of its producers the fluid milk price for all their milk and the remaining 25% the cream price for all their milk. Such a method obviously would be inequitable. Instead, each producer is paid the whole milk price for 75% of his production and the cream price for the remaining 25%. Under the proposed marketing agreement the fluid milk sales of the whole market are distributed among all producers in the milk shed in exactly the same way as though they were all members of a cooperative association which equalizes its fluid milk sales among its members.

In the past, the lack of any plan for an equitable distribution of fluid milk sales among all producers was one of the principal causes of unsatisfactory conditions in the San Diego Marketing Area. A handler's ability to pay his producers a favorable composite price, as compared with the price of competitors, has depended largely upon his not having so great a volume of surplus sales as his competitors. If, by cutting prices, a producer succeeded in selling a large percentage of his milk as fluid milk, the composite price received would be higher than that of another producer who received the full market price but carried a larger percentage of the surplus. Thus a handler could cut the price of fluid milk in the city and still pay a composite price in the country, as high or even higher than that of the competitors who did not cut prices.

The actual operation of the equalization plan is simply a means of distributing equitably among all producers the classified value of the milk sales in the market by all handlers. With a 40% surplus over Class I sales in a market, each producer should get surplus prices on 40% of his deliveries. The Class I, Class II, and Class III sales are not distributed equally among handlers. One handler may have no Class I sales, yet his producers are entitled to the Class I price for 80% of their deliveries. But another handler may sell 100% of his producers' milk as Class I and his producers, if they are to carry the same amount of surplus as other producers, should get the Class I price for only 60% of their deliveries. This is accomplished through the maintenance of an "equalization account" by the Market Administrator. A given handler might conceivably dispose of milk in each class so that the percentage of his total sales and uses in each class would equal exactly the percentage of total sales and uses in the entire market in each class. Such handler would neither pay into nor receive from the equalization account. But a handler whose Class I sales are high in relation to the average of the market would pay into the account and a handler whose Class I sales are low in relation to the average would receive from the account.

The whole plan works exactly as if all handlers paid into a pool the value of: (1) Their volume of Class I milk times the Class I price plus the volume of their Class II milk times the Class II price, plus the volume of their Class III milk times the Class III price, whereupon the total sum would be distributed equitably among producers according to their deliveries. The Market Administrator's office acts merely as a clearing house for transactions. Thus there remains room for any gains through superior quality or differences in efficiency of any individual handler, because any gain from operations after the milk has passed the receiving room door is retained by the handler and not shared by the rest of the market.

E. Computation, accounts and payments.

Article V of the proposed marketing agreement sets forth three types of reports which handlers are required to submit and provides for the verification of these reports. The necessity for all these reports and for their verification becomes apparent with the realization of the nature of a milk market and practical operating problems which arise in making effective the class prices in the payments to all producers of uniform prices which reflect the utilization of milk by all handlers.

Section 1 requires handlers to submit reports on or before the fifth day after the end of each delivery period, showing, in such detail and form as the Market Administrator discovers to best fit the particular conditions, the information as to all milk or cream received by handlers and the utilization of such milk. With this information before him, the Market Administrator is able to determine for each handler the classification of the milk, the total payment to be made to producers therefor, and, after combining the total payments of all handlers, the uniform price which will distribute such total amount of money to all producers who delivered the milk to all handlers.

Section 2 provides for other reports with respect to producers delivering milk to a handler. These reports enable the Market Administrator to secure needed information with respect to producers after a handler has newly become a party to the agreement or to request information not already in his hands, which is needed for full knowledge in order to effectuate and to determine the effects of the agreement in relation to the policy of the Act. The second report provided for under section 2 requires that each handler report to the Market Administrator upon first receiving milk from any producer who has not previously shipped milk to that handler, in order that the Market Administrator may keep his records up to date with respect to the producers delivering to each handler and to the coming into the market of producers who did not market milk regularly, for thirty days prior to the effective date of the marketing agreement.

Section 3 provides for the regular reporting by handlers of their payments to producers for each delivery period in the form of a copy of the handler's producer payroll. Such a report expedites the routine

checking of compliance with the marketing agreement and provides in an economical way the information necessary for the Market Administrator to maintain adequate producer records.

Section 4 provides that each handler shall permit the Market Administrator to verify the information contained in all reports. The importance of routine verification of all reports is readily understandable in view of the intricate and detailed transactions which are inherent in the milk business. Where errors both wilful and accidental may so readily creep in and affect the returns to producers, successful operation of a marketing agreement will depend to a large degree upon the extent to which the Market Administrator assures himself of the correctness of the figures supplied him in the reports and of the correctness of the sampling, weighing and testing for butterfat of the milk which is delivered by producers. Such routine verification is thus extremely necessary for the effectuation of the provisions of the marketing agreement.

The provisions of article VI of the proposed marketing agreement relate to handlers who are also producers. Section 1 prescribes the method by which the Market Administrator is to include in the pool computations the milk purchased by such handlers from other producers. The milk produced by such handlers is not included in the pool computations. After excluding milk purchased from other handlers, milk purchased from producers is to be apportioned to each class according to the ratio which such handler's remaining total sales in each class bears to his remaining total sales in all classes. It is necessary to accord such special treatment to milk purchased from producers by handlers who are also producers, as such milk is intermingled with the milk produced and it is necessary to allocate it as among the three classes upon a reasonable basis.

Article VII of the proposed marketing agreement is purely administrative in nature but necessary in order to set forth definitely the procedure by which the Market Administrator is to translate the class prices into uniform prices to all producers.

Section 1 of this article provides for the computation of the total value by classes of all the milk purchased by any handler to determine his total obligation to producers for milk purchased.

Section 2 provides for the computing of the uniform price per pound butterfat to all producers delivering to handlers, which will distribute the total value of milk received from producers by all handlers. The Market Administrator is required to notify all handlers and publish the uniform prices in effect for any delivery period on or before the 10th day after the end of such delivery period. The Market Administrator is thus allowed five days from the time of receiving reports of handlers for the necessary computations. The announcement of the price on this date allows a period of five days after receiving notice of the price before payment is required to be made to producers as a reasonable time for the

clerical work necessary on the part of handlers in preparing checks and statements for distribution to producers. The series of computations is as follows:

1. Combine into one total the obligations computed for all handlers who are not in arrears as to any payments for the previous delivery period. Thus, is made up the total market pool or the total amount of money to be distributed by means of the uniform prices. If a handler should fail to pay to the Market Administrator that part of his total obligation which is to be paid to producers by way of the Market Administrator, the paying out of the pool will be reduced by that amount. If a handler has so failed in one delivery period, it is reasonable to expect that he may repeat his failure in the next. Experience in operating market pools under licenses has shown that handlers will tend to make their reports and then fail to make the payments, making necessary a further guide to the make-up of the pool than that of having a report in hand. Such a procedure, prescribed for the Market Administrator, in no way relieves the handler in his violation of the agreement.

2. The payment to certain producers for their milk at the Class III price being prescribed, it is necessary to subtract from the total pool the amount of money which is prescribed to be paid out in these cases.

3. There is now left in the pool the net amount of money to be divided over all the milk which was delivered by producers. This sum is divided by the remaining quantity of milk, the result being the uniform price per pound butterfat.

4. There is a contingency, however, that not all of the handlers will make the portion of the payment to producers through the Market Administrator which is prescribed in article VIII. To cover such a contingency the Market Administrator is authorized to deduct from the rate per pound butterfat an amount between 1 and $1\frac{1}{4}$ cents. This withholding of part of the price as computed is not ultimately a deduction at all but a deferring of the full payment until the money is sure to be in hand.

5. Paragraph 5 of the computations is a companion to paragraph 4 and to section 3 in providing for the distribution of all money in hand for producers up to the next preceding delivery period but one. By this means all of the collections for which the $1-1\frac{1}{4}$ cents per pound butterfat was set aside are distributed each delivery period (one delivery period intervening) as the collections are made. It is more important to consider these three provisions in the light of the practical operation of the plan than to consider them in the light only of possible wilful violations of the proposed marketing agreement. Inevitably some reports will be late, some payments will fail to reach the Market Administrator on time, and errors will be made in both reports and payments.

These three provisions give the Market Administrator a method by which
to meet the practical problems which will arise in connection with the
pool and still preserve practical equity in the distribution of money
as among producers. The blended price announced by the Market Adminis-
trator, therefore, represents the pooled utilization of milk for the de-
livery period less 1-1¼ cents, plus whatever hitherto uncollected money
has come into the Market Administrator's hands for previous delivery
periods.

Article VIII of the proposed marketing agreement provides that
the minimum class prices shall be paid by handlers for each delivery
period not later than the 15th day following the delivery period in the
form of uniform prices to all producers. Paragraph 1 of section 1,
therefore, provides that each producer shall be paid the uniform price
per pound butterfat and paragraph 2 provides for the payment to producers
who have not regularly sold milk within the marketing area or to a
handler for a period of thirty days prior to the effective date of the
proposed marketing agreement at the Class III price for all the milk
delivered during the period from the first delivery of milk until the
end of two full calendar months thereafter. Such a provision, authorized
by the Act, is based upon the characteristics of a milk market and of the
necessary preparation which the dairyman must undertake to fit him for
supplying the milk market with regular quantities of acceptable milk.
The provision serves as a measure of protection to the dairyman who might
be induced to make such preparation by a handler, later to be cast adrift
by the handler when his purpose has been served, and further, as a period
of reasonable apprenticeship during which the dairyman may demonstrate
his ability to meet the obligations inherent in supplying a milk market
and thus be in a position to secure real benefit from the regulation of
handlers.

Paragraph 3 provides for the completion of the payment by each
handler of the full classification value, but no more, of the milk re-
ceived, as the handler made use of it, by paying to or receiving from
the Market Administrator the difference between his payments direct to
producers and the classification value of his milk. Thus, when all of
the payments set forth in article VIII have been made, each handler
has paid the minimum class prices uniformly with all other handlers,
and producers have received uniform prices for milk delivered.

> F. Expenses of Administration, (Article IX of the Proposed
> Marketing Agreement.)

The market administrator must necessarily incur many expenses
in his operations: he must maintain a personnel sufficient to (a)
compute periodically the prices to be paid by handlers to producers,
(b) record and audit the sales reports of handlers, and (c) provide for
contact work with handlers and other parties in the market.

Table 45 shows the cost incurred in the administration of License

Table 45. Expenditures from the administrative fund under License
No. 98, San Diego Sales Area for the period February 1, 1935 to
December 31, 1935.

Expense item	Amount
	Dollars
Salaries	4,520.13
Auto and travel expense	298.20
Furniture and fixtures	254.10
Rent	440.00
General expense	1,121.12
Total	6,633.55
Cost per pound of butterfat	.00385

Compiled from records of the Market Administrator, License
No. 98.

No. 98 during the period July 1, 1935 to December 31, 1935 on a check-off of one-half cent per pound of butterfat. The total cost of administration amounted to $.00385 per pound of butterfat.

Article IX of the proposed marketing agreement for the San Diego Marketing Area provides that each handler pay to the market administrator a sum not exceeding one (1) cent per pound of butterfat, the monies so obtained being used to cover the cost of administration of the proposed marketing agreement. The exact amount per pound of butterfat is to be determined by the market administrator subject to review by the Secretary. In view of the experience gained in the administration of License No. 98, it appears that the maximum charge for meeting costs of administration, one cent per pound of butterfat as specified in Argicle IX of the proposed marketing agreement is reasonable.

G. Unfair methods of competition. (Article X of the proposed marketing agreement.)

By the terms of Article X of the proposed agreement each handler is to refrain from any practices with respect to the transportation of milk, or the supplying of goods or services to producers from whom milk is purchased which would tend to defeat the purposes of the Agreement. The main opportunity which a handler would have of defeating the purposes of the agreement, without openly violating its price provisions, would be to charge exhorbitantly for services or goods furnished producers or to furnish goods or services to certain producers on different terms than to others. This provision of the agreement makes it clear to agreeing handlers and to producers that no party to the agreement is to violate the agreement through practices which do not come directly under the control of the Market Administrator.

APPENDIX A

THE PRICE STRUCTURE FOR MILK

Technical Paper No. 1, Dairy Section,

Agricultural Adjustment Administration,

United States Department of Agriculture.

THE PRICE STRUCTURE FOR MILK

by

E. W. Gaumnitz [1]
and
O. M. Reed [2]

Introduction

One of the most important and perplexing problems encountered in milk marketing is that pertaining to the classification of milk. This problem is merely one of many, although fundamental and probably the most important, that may and perhaps must be approached through a study of the price structure for milk.

This paper was written for use in connection with marketing agreements and orders for milk. However, numerous questions have arisen pertaining to the classification of milk, the price structure, and related problems, and it is for these reasons that this paper is made available at this time.

This analysis of the price structure has been developed under assumptions of competitive conditions. Numerous details have been omitted in the interest of brevity and in order that the discussion be suitable for general use. The analysis will be expanded as rapidly as possible, and the later phases of the work are to deal primarily with the price structure when the assumptions upon which this paper is based are varied.

The authors have received aid from several persons in the development of this paper. Dr. Warren C. Waite helped draft the paper in all but the latest stages of its development, and Dr. Harold B. Rowe contributed many valuable suggestions relative to the technique of the analysis. Others have made fruitful suggestions and have aided materially in editing the paper.

Part I

THE PRICE STRUCTURE FOR MILK FOR THE COUNTRY AS A WHOLE

A complete analysis of the price structure for milk for the country as a whole would fill a rather sizable volume. However, for the purposes of this paper, it is unnecessary to devote a great deal of time and space to the development of such an analysis. All that is intended in Part I is to develop a rather general treatment of the price structure for milk for the country as a whole, in order that the analysis of the price structure for milk within a milk shed may be approached more satisfactorily.

An explanation of the price structure for dairy products for the country as a whole involves consideration of (1) the conditions affecting the demand for milk, and (2) the supply characteristics of milk with respect to the localization of particular phases of the industry and the interchangeability of milk between different dairy products. Likewise, an explanation of the price structure for milk within a particular area or a particular milk shed involves consideration of (1) the nature of the demand for the different products derived from milk, and (2) the conditions affecting the supply of milk.

A. The nature of the demand for milk. It is well recognized that the demand for any commodity is a composite of the demands of the different groups of people who are ready to purchase different quantities of it at different prices. Similarly, the demand for a product such as milk, which is used in the production of a number of different products, [1] is

---

[1] In 1932 the total volume of milk used in the manufacture of dairy products and used by the non-farm population as fluid milk and cream was distributed among the various uses as follows:

Product	Percent of total volume used
Butter - creamery and whey	45.6 [a]
Other manufactured products	13.2 [a]
Milk used by non-farm population as fluid milk and cream	41.2 [b]
Total	100.0

[a] Compiled from estimates of the production of manufactured dairy products, Bureau of Agricultural Economics, U. S. Department of Agriculture.

[b] Compiled from Estimates of Consumption of Milk and Cream in Cities and Villages, Bureau of Agricultural Economics, U. S. Department of Agriculture.

the aggregate or composite demand for milk in all uses. Thus, although the different forms or products in which milk is used are competitive in the sense that each use competes with all other uses for a portion of the total supply of milk, and the derived demands are rival or competitive, in the aggregate they comprise the total demand for milk. The nature of the demand for fluid milk is discussed at length in Part III of this paper.

B. The supply characteristics of milk.

1. Localization of the industry. Although milk production is an important agricultural enterprise in practically every State in the United States, it nevertheless varies markedly between areas as to relative importance and is highly concentrated in certain areas. An important factor in this connection is the fact that the transportation system has developed so that certain areas possess a comparative advantage in the production of milk for use in the production of dairy products that are readily storable and transportable, and others have a comparative advantage in the production of milk for fluid consumption. Thus, the States of Iowa, Minnesota, Nebraska and Wisconsin produced 44.8 percent of the total volume of creamery butter produced in the United States in 1932 and 1933. Wisconsin and New York produced 64.8 percent and 62.1 percent of the total volume of cheese produced in the United States in 1932 and 1933, respectively. Of the total United States production of evaporated milk in 1933, Wisconsin and California produced 53.3 percent, and the five States of Wisconsin, New York, California, Illinois and Ohio produced 70.0 percent. [2] In those areas wherein large urban centers are situated, notably the New England and Middle Atlantic areas, as well as in the territory immediately surrounding other urban centers, the larger part of the total volume of milk produced is utilized in the form of fluid milk and cream.

2. The interchangeability of the supply of milk between uses. The milk supply of the country is interchangeable between uses, especially so in the case of manufacturing uses. In general, there is little difference between the quality requirements for milk used in the production of evaporated milk, butter, cheese and other manufactured dairy products. In addition to the fact that milk is markedly interchangeable between the uses noted above as far as quality requirements are concerned, processing facilities for the different products are so intermingled geographically, and, in fact, are in many cases available in one plant, that the matter of the location of the producer with respect to processing facilities for the different products is usually not important in

---

[2] Manufactured Dairy Products, Bureau of Agricultural Economics, United States Department of Agriculture.

preventing producers from shifting their milk from one channel of disposal to another. Thus, should relative price conditions warrant, the producer can in most cases shift his milk from one use to another. In the case of those plants manufacturing two or more products, the producer does not have to shift his milk from one plant to another, the shift or change in the relative volume of milk entering the different uses being accomplished by the plant management, and for the same reason that would lead the farmer to shift his milk from one use to another.

The interchangeability of the supply of milk between milk produced for use as fluid milk and that produced for use in the production of various manufactured dairy products is not so marked as is the interchangeability of milk between the different manufactured products. This is due in large part to the fact that in most milk markets milk used as fluid milk must be produced in accordance with more stringent sanitary requirements than is the case with milk produced for use in manufactured dairy products. However, this factor operates, principally, to lengthen the period of time necessary for a producer to shift his disposal of milk from manufactured dairy products uses to fluid use. The producer, in order to shift from the production of manufacturing milk to the production of fluid milk, must equip his barn and follow the procedure with respect to sanitation that is specified in the health ordinances of the city or town in which he wishes to sell fluid milk. This involves additional expense in producing milk, but, if the farm price of fluid milk is sufficiently above the farm price of manufacturing milk, the producer will equip his barn and conform to sanitation regulations in order that he may sell fluid milk. Thus, although the degree of interchangeability of milk between fluid use and manufactured product uses is less marked than the degree of interchangeability of milk between the different manufactured product uses, producers can and do shift from the production of manufacturing milk to the production of fluid milk when price relationships warrant. Similarly, when the price of fluid milk declines to a point where it is not sufficiently high to cover the additional costs of producing milk for fluid consumption, producers discontinue the production of milk for consumption as fluid milk and produce milk for use in the production of manufactured dairy products.

C. Factors affecting the general level of the prices of dairy products.

1. Demand factors. Numerous factors influence the demand for dairy products, such as the volume of the money income of consumers, consuming habits, etc. Perhaps the most important of the factors affecting the demand for dairy products is the volume of money consumers have available for the purchase of goods. Thus, the prices of dairy products vary directly with the income of consumers (assuming constant supplies). The relationship between the index of the farm prices of dairy products and

the index of factory payrolls (taken as a measure of changes in the income of consumers) is shown in Figure 1. As was stated above, numerous factors affect the demand for milk. However, for the purposes of this paper, it is unnecessary to discuss them in detail.

2. Factors affecting the supply of milk. The changes in the volume of milk that will be forthcoming from a given number of cows due to changes in weather, pasture and crop conditions need no comprehensive treatment here, since it is obvious that sudden and wide variations in the weather, droughts and other unusual weather conditions that operate to reduce or increase the quantity and quality of feed relative to the number of livestock, all tend to cause variations in the supply of milk.

Aside from the factors noted above, changes in the prices of dairy products relative to the prices paid by milk producers for the articles used in milk production, as well as changes in the prices of dairy products relative to the prices of other farm products, affect the volume of milk produced. In the Middle West, for example, changes in the prices of competing farm products have an important effect on milk production. An increase in the price of beef, or a relative decline in the prices of dairy products, is sufficient to cause large numbers of farmers in this section, particularly in the area west of the Mississippi, to turn to raising beef steers and heifers and let the calves suckle the cows longer than was the practice before the change in relative prices. In addition, in numerous cases where more than one livestock enterprise is followed on the farm, a relatively larger volume of the feed available is fed to livestock other than milk cows when prices of alternative livestock products become favorable relative to the prices of dairy products.

D. Relationships between the prices of dairy products in different markets.

Since most manufactured dairy products are readily transportable, the price of a product such as butter tends to vary between markets by not more than the amount necessary to cover the cost of shipping the product (freight and handling costs) from one market to another. Thus, in Chicago, Illinois, situated in the large surplus butter-producing area comprising the East North Central and West North Central States, the price of butter is generally lower than in New York City by an amount sufficient to cover freight and handling charges from Chicago to New York City (New York City being located in a deficit butter-producing area). The decidedly close relationships between the prices of butter in different markets are shown in Figure 2.

The prices of cheese in different markets vary together (see Figure 3), partly for the same reasons as those advanced above with respect to butter and also because of the possibility of shifting from cheese production to the production of butter, which is more widely

Percent

Index of the Farm Prices of
Dairy Products
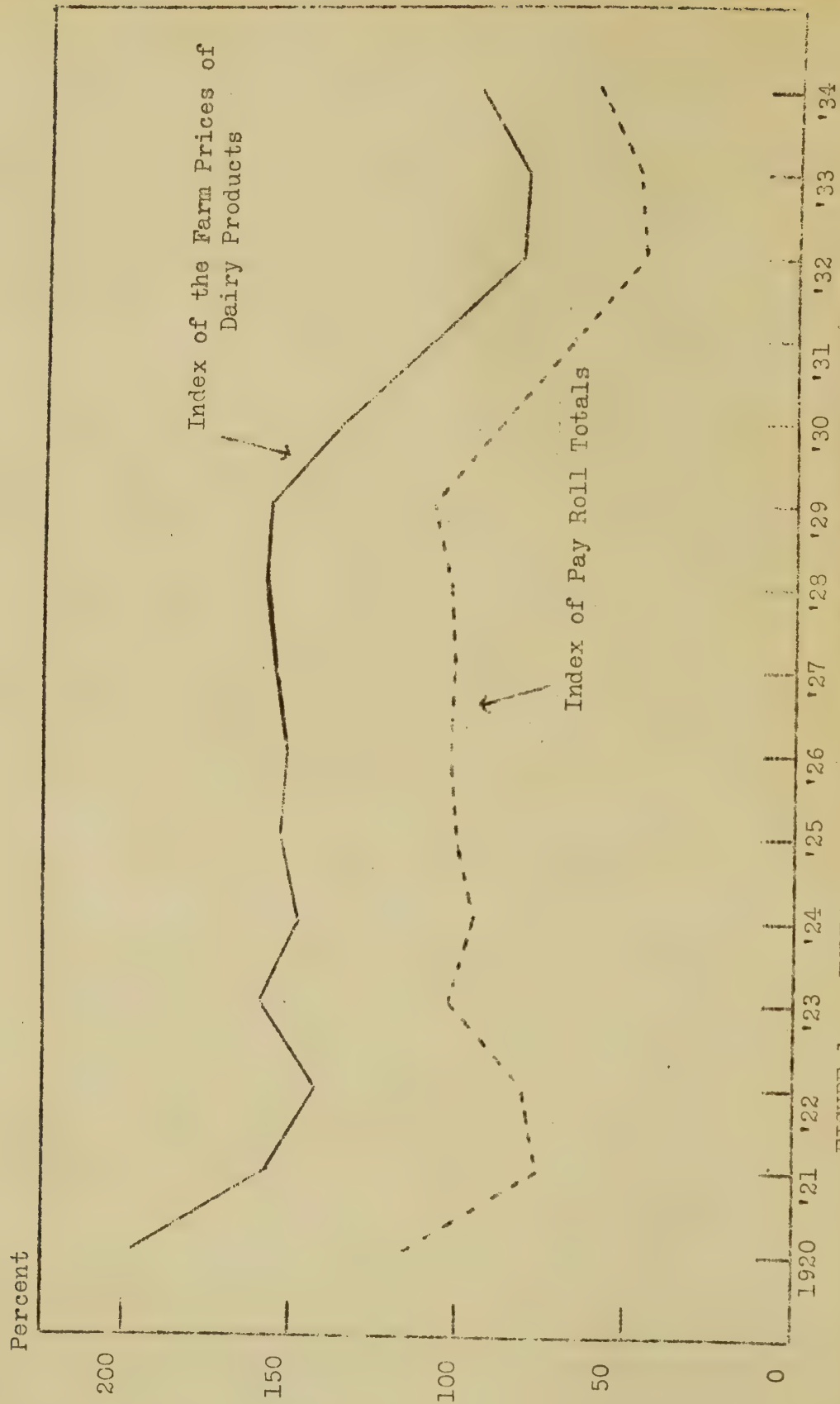
Index of Pay Roll Totals

FIGURE 1. - INDEX NUMBERS OF U.S. FARM PRICE OF DAIRY PRODUCTS
(AUGUST 1909 - JULY 1914 = 100)
AND INDEX NUMBERS OF PAY ROLL TOTALS IN MANUFACTURING
INDUSTRIES (1923-1925 = 100)
1920-1934

transported. The same relationships exist with respect to evaporated milk.

In view of the foregoing, it should be evident that the market for the most important manufactured dairy products is national in character and that the price of milk or butterfat used in the different products noted above in any particular area is closely associated with the price of milk so used in any other area.

E. Relationships between the price of milk used in different products.

As was pointed out in B above, the supply of milk is markedly interchangeable between uses in the case of milk produced for manufacturing purposes and to a lesser extent between fluid milk and manufacturing milk uses. This factor operates to establish close relationships between the price of milk in different uses, in the country as a whole, as well as within areas. (See Figure 4.) Thus, although the price of milk produced for use as fluid milk is generally higher in any particular area than the price of milk produced for use in manufactured dairy products (for the reasons advanced in section B and section C), and therefore the market for fluid milk in any particular area may be considered as a local market, the price of milk produced for use as fluid milk varies with the price of such milk in any other area and also varies with the price of milk produced for use in manufactured dairy products, both for the country as a whole and in the different sections of the country.

Table 1. Wholesale prices of butter and cheese, index numbers of milk prices and index numbers of payroll totals, 1920-1934.

Year	Wholesale price of 92-score butter at New York per pound (Cents)	Wholesale price of 92-score butter at Chicago per pound (Cents)	Wholesale prices of American cheese, Single Daisies (Wis.) per pound (Cents)	Wholesale prices of American cheese, Single Daisies per pound (Cents)	Wisconsin Twins (Wis.) Cheese (Exchange) per pound (Cents)	Index numbers of farm prices of all milk sold for 3.5% (Aug.1909-July 1914 = 100) Percent	Index numbers of prices paid to producers for 3.5% milk at Wholesale (1910-1914 = 100) Percent	Index numbers of prices paid by milk dealers for 3.5% milk used for condenseries for city distribution (1910-1914 = 100) Percent	Index numbers of payroll totals (1923-1925 = 100) Percent
1920	61.4	58.65	-	-	24.9	191	-	197	117.1
1921	43.3	41.68	21.46	20.53	18.3	158	134	149	76.2
1922	40.6	39.21	-	21.04	19.3	141	118	129	81.3
1923	46.9	46.03	-	23.86	22.1	155	153	150	103.3
1924	42.6	41.19	21.42	19.93	18.2	139	127	147	96.1
1925	45.3	44.07	24.44	22.99	21.5	142	138	149	100.6
1926	44.4	42.79	23.27	21.96	20.1	139	137	153	103.8
1927	47.3	45.78	25.51	24.6	22.7	141	147	152	101.8
1928	47.4	46.00	25.38	24.1	22.1	142	147	154	102.4
1929	45.0	43.75	23.63	22.2	20.2	142	142	157	109.1
1930	36.5	35.23	19.68	18.3	16.4	128	116	149	88.7
1931	28.3	27.05	15.41	14.4	12.5	98	82	123	67.5
1932	21.0	20.07	12.76	11.9	10.0	73	62	96	46.1
1933	21.66	20.79	13.08	12.12	10.2	72	68	89	48.5
1934	25.7	24.77	14.19	13.41	11.7	85	79.5	105	61.9

Compiled from records of the United States Department of Agriculture and the United States Bureau of Labor Statistics.
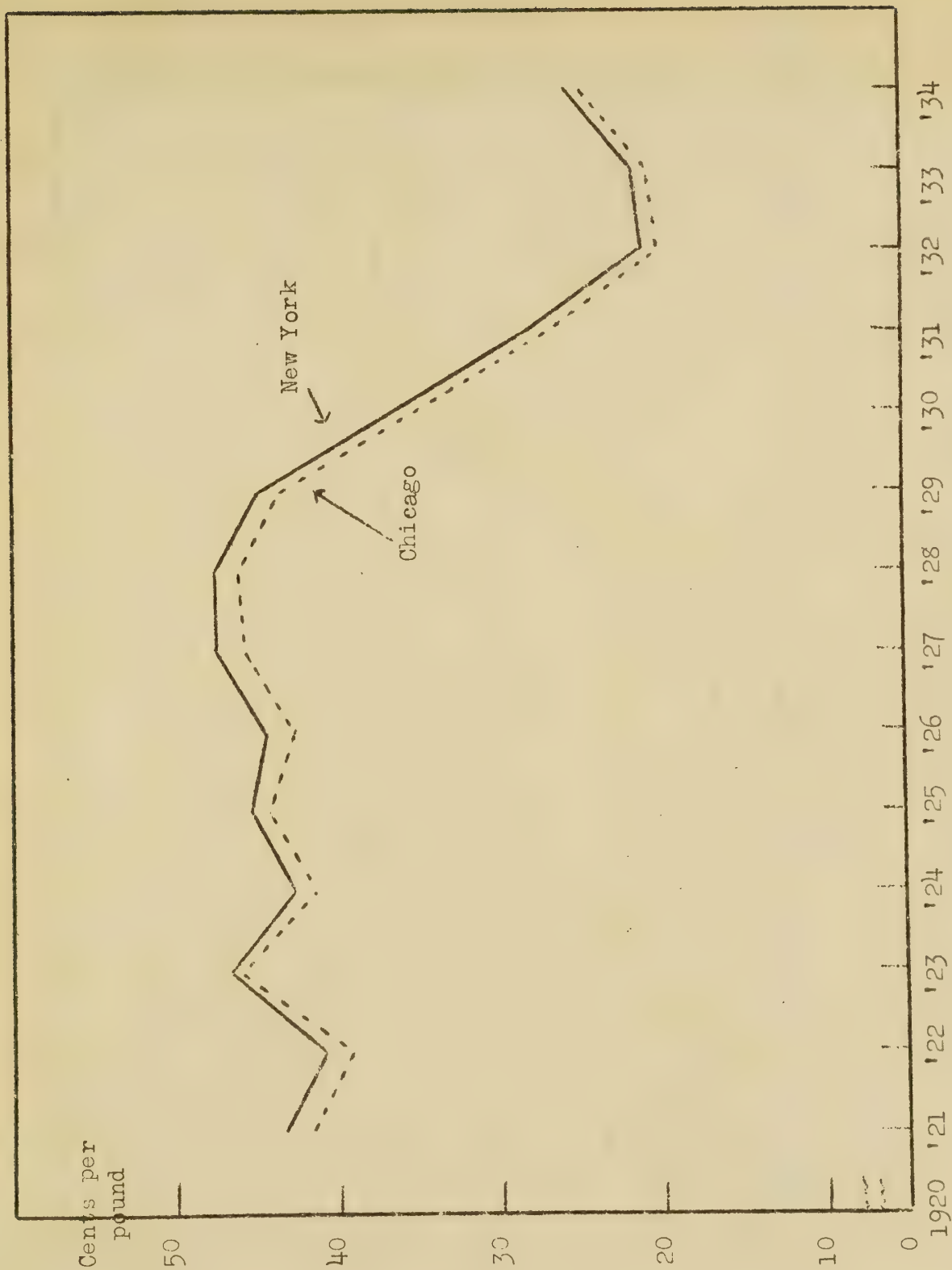
FIGURE 2. - WHOLESALE PRICE OF 92-SCORE CREAMERY BUTTER AT NEW YORK CITY AND CHICAGO, 1921-1934.
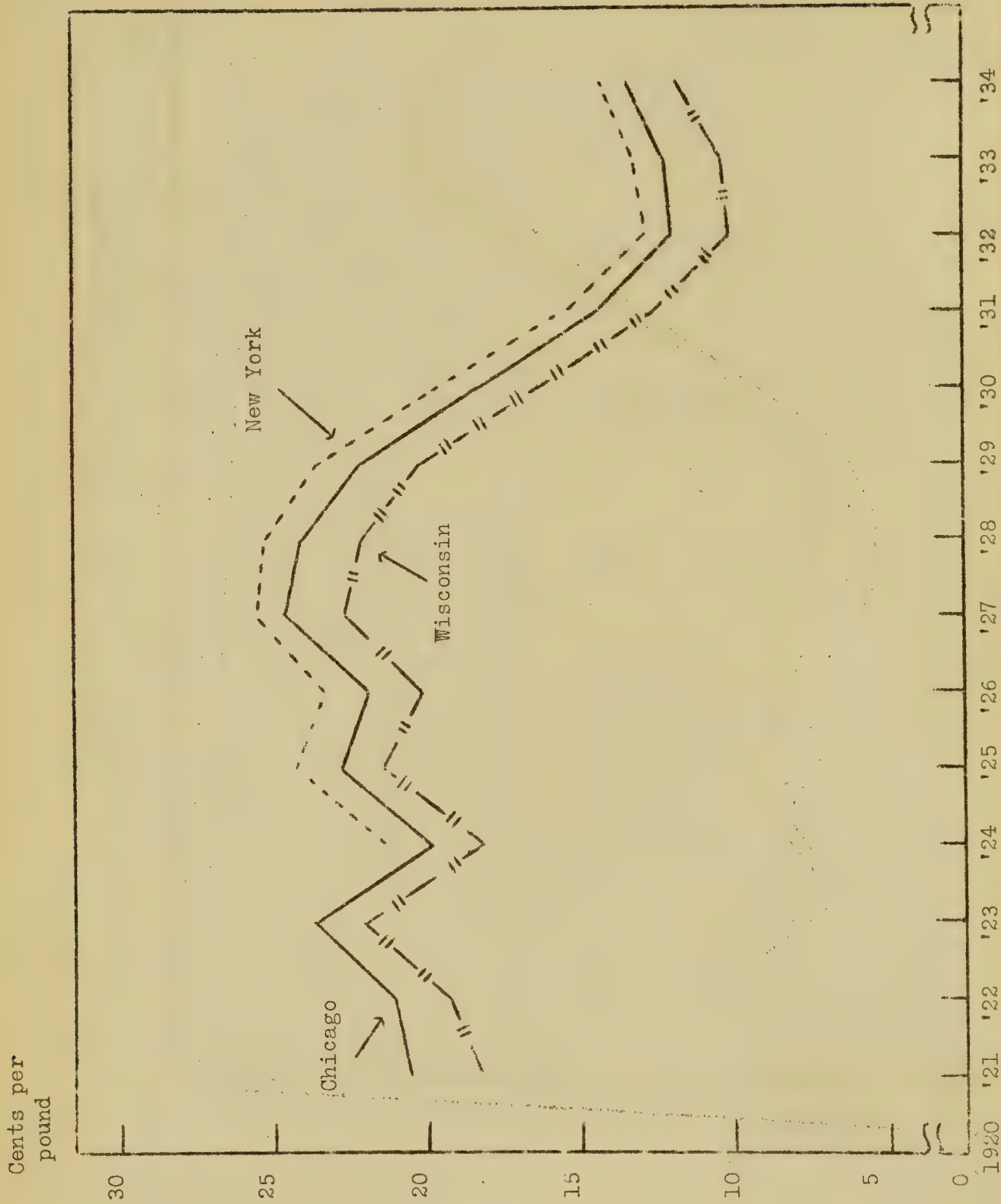
- 10 -

FIGURE 3. - WHOLESALE PRICES OF AMERICAN CHEESE - NEW YORK SINGLE DAISIES, CHICAGO SINGLE DAISIES, AND WISCONSIN TWINS (ON THE WISCONSIN CHEESE EXCHANGE), 1921-1934.
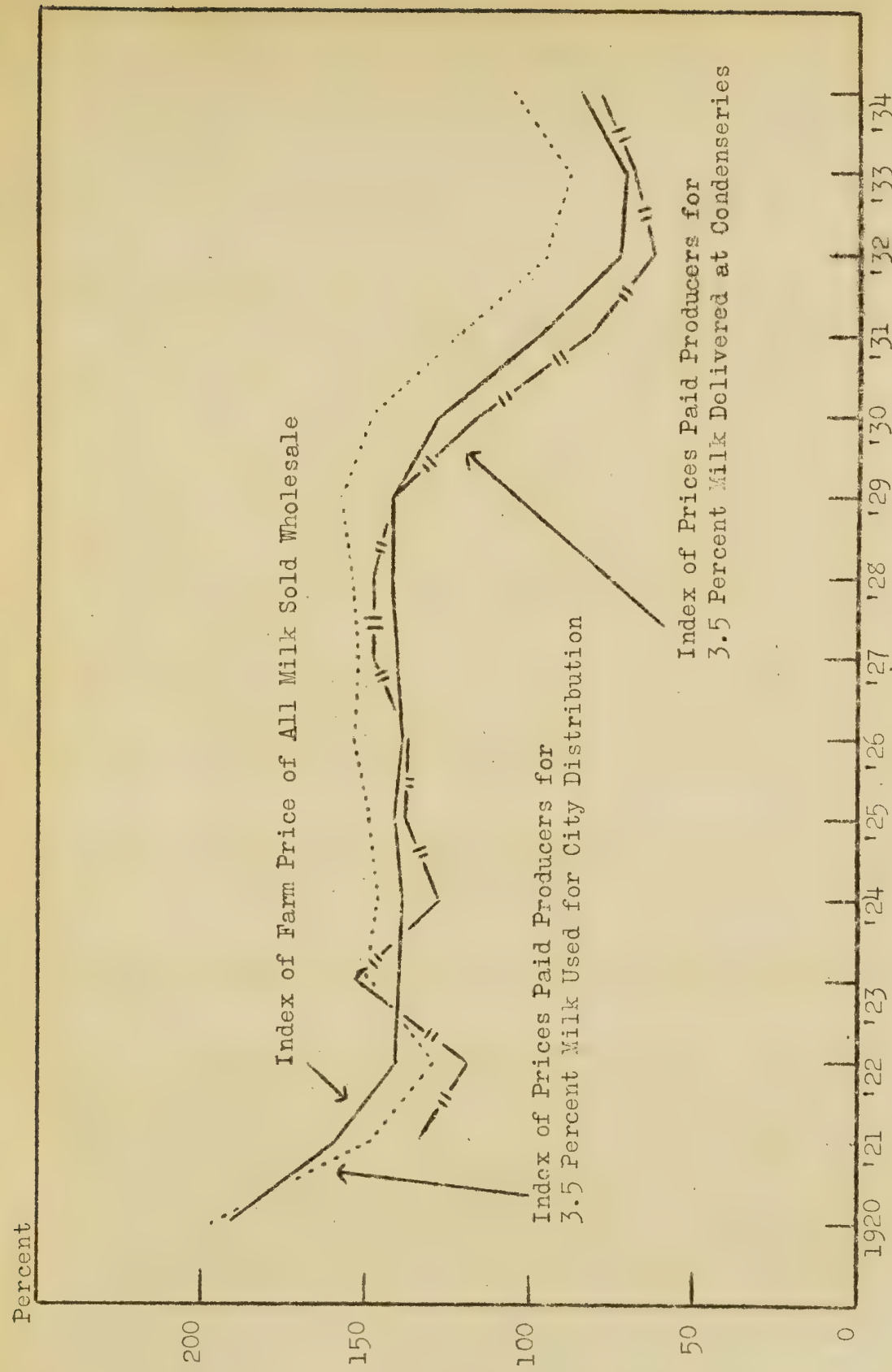
Percent

Index of Farm Price of All Milk Sold Wholesale

Index of Prices Paid Producers for
3.5 Percent Milk Delivered at Condenseries

Index of Prices Paid Producers for
3.5 Percent Milk Used for City Distribution

FIGURE 4. - INDEX NUMBERS OF FARM PRICES FOR ALL MILK SOLD WHOLESALE, INDEX
NUMBERS OF PRICES PAID TO PRODUCERS FOR 3.5 PERCENT MILK DELIVERED AT
CONDENSERIES, AND INDEX NUMBERS OF PRICES PAID BY MILK DEALERS FOR
MILK TESTING 3.5 PERCENT BUTTERFAT, USED FOR CITY DISTRIBUTION
AS MILK AND CREAM, UNITED STATES, 1920-1934. (1910-1914 = 100)

Part II

THE PRICE STRUCTURE FOR MILK WITHIN A MILK SHED

The terms under which milk is sold vary widely between markets. In some markets, usually small markets located within a surplus area or with few or no sanitation requirements, producers receive the same price f.o.b. the market for all milk, regardless of whether it is used for fluid milk, cream or manufactured dairy products. In other markets, while producers receive the same price for all milk sold, this price is a weighted average price which is computed by adding together the value of milk sold to distributors in accordance with a schedule of the prices for milk used for various products, and dividing the total sum so computed by the total volume of sales to distributors. In still other markets, producers receive two or more different prices for different portions of the milk which they deliver, a weighted average price for that portion of their milk sold as fluid milk and cream, and a lower price on the remainder, which is used in the production of manufactured dairy products. Again, producers may receive one price for that portion of their milk sold as fluid milk, another price for that portion sold as fluid cream, and still another price for that portion which is used in the production of manufactured dairy products such as butter, evaporated milk and cheese.

In this section, the relationships between the prices of milk used for different purposes f.o.b. city, and the farm price structure arising therefrom, are examined in some detail.

A. The price structure; uniform quality requirements - centralized processing.

For purposes of presentation, the price structure is examined in a hypothetical market, wherein factors operating to establish a differentiation in the prices of milk used in the production of different dairy products are assumed to be non-existent. One by one the factors operating to establish such differentiation in the prices of milk used in the production of different dairy products are considered, and thus the analysis of the price structure progresses from that of the highly simplified hypothetical market toward that of the most complex type of market. For purposes of analysis, therefore, it is assumed that:

1. There is a freely competitive market.

2. Local delivery costs and labor are the same for all classes of product.

3. There is no variation in the volume of milk consumed in different forms.

4. All milk, whether sold to consumers as fluid milk or other dairy products, is of uniform quality.

5. All milk is brought to the city in fluid form, there to be processed into the various dairy products.

6. There is no variation in the volume of milk sold per farm from day to day.

Under the conditions noted above, it is obvious that producers would receive the same per unit price for all milk brought to the market since each unit of the supply is interchangeable with every other unit. This would be true regardless of whether the milk were sold to the consumer as fluid milk, fluid cream, or manufactured dairy products.

However, it is well recognized that the butter and other manufactured dairy products equivalent of a unit of milk can be transported long distances at very low cost per product equivalent of a unit of milk as compared to the cost of transporting a unit of milk the same distance, and can be kept in storage for a relatively long period of time without appreciable deterioration in quality. Manufactured dairy products are composed largely of milk solids, or, stated differently, they are composed of one or more of the constituents of milk concentrated to a very much greater degree than in whole milk. Thus it is more economical to produce the finished product, such as butter, cheese, etc., at a distance from the market and transport the finished product to the market, rather than to transport whole milk to the market and there process it into the finished product (unless, of course, the demand for all the products of milk in the market can be satisfied from the volume of milk produced in the area immediately surrounding the market). For example, one hundred pounds of butter contain approximately 80 pounds of butterfat, and one hundred pounds of 3.5 percent milk contain 3.5 pounds of butterfat. Assuming that transportation costs per one hundred pounds of product are equal, the cost of transporting butterfat in the form of butter and in the form of 35 percent cream would be about 1/23 and 1/10, respectively, of the cost of transporting butterfat in the form of milk. The reasons given above suffice to explain why manufactured dairy products are produced, in many cases hundreds of miles from the market, and shipped to the market in finished product form rather than being shipped to the market in the form of fluid milk and there processed into the finished product.

B. The price structure; uniform quality requirements - decentralized processing.

For the purpose of considering the manner in which the transportation factor affects the price structure for milk within a milk shed, the preceding assumption that all milk is brought to market, there to be processed into the several milk products, is now dropped and, instead, in addition to the remaining assumptions noted previously, it is assumed that:

1. All the milk which is produced within 100 miles from the market is needed to satisfy the demand for fluid milk.

2. All the milk which is produced in the area between 100 and 150 miles from the market is needed to meet the demand for fluid cream.

3. All the milk which is produced within the area between 150 and 200 miles from the market is needed to meet the demand for evaporated milk.

4. All the milk which is produced within the area between 200 to 400 miles from the market is required to meet the demand for butter.

5. Transportation costs vary in direct proportion to distances at the following rates per unit per mile:

    (a) Whole milk - 1 cent per hundredweight.

    (b) The cream equivalent of 100 pounds of 3.5 percent milk - 0.2 cent.

    (c) The evaporated milk equivalent of 100 pounds of 3.5 percent milk - 0.1 cent.

    (d) The butter equivalent of 100 pounds of 3.5 percent milk - .05 cent.

6. The farm value of skim milk exactly equals the cost of separating cream from milk.

7. The f.o.b. city value of the butter equivalent of 3.5 percent milk (it is assumed that the over-run is necessary to cover the manufacturer's margin) is $1.00.

Under the above assumptions the f.o.b. city prices that must be paid for milk in order to secure the volume necessary to meet the demand for milk, as well as the f.o.b. city prices that must be paid for the cream equivalent and evaporated milk equivalent of 100 pounds of milk to

meet the respective demands, can be readily computed. Thus, with the
f.o.b. market price of the butter equivalent of 100 pounds of 3.5 percent
milk at $1.00, the farm price of 100 pounds of milk which is converted to
butter at a point 400 miles from the market is $1.00 less the cost of
transporting the butter equivalent of 100 pounds of such milk to the mar-
ket, or 80 cents ($1.00 - (400 X $.0005) = $.80). At a point 200 miles
from market the farm price of milk used for butter is 90 cents ($1.00 -
$.10 transportation costs = $.90). If milk is to be used in the produc-
tion of evaporated milk at a point 200 miles from the market, the farm
price of such milk must be 90 cents per hundredweight or else farmers will
sell their milk to butter manufacturers rather than manufacturers of
evaporated milk. The f.o.b. city price of the evaporated milk equivalent
of 100 pounds of 3.5 percent milk will be the farm price of 100 pounds of
3.5 percent milk at a point 200 miles from the market, plus the cost of
transporting the evaporated milk equivalent of such milk to the market, or
$1.10 ($.90 + $.20 = $1.10). Similarly, the farm price of milk used to
produce cream at a point 150 miles from the city must be equal to the farm
price of milk used to produce evaporated milk at that point, else farmers
will sell their milk for use in evaporated milk rather than cream, and the
f.o.b. city price of the cream equivalent of 3.5 percent milk will be the
farm price of such milk at a point 150 miles from the market plus the cost
of transporting the cream equivalent of 100 pounds of 3.5 percent milk
from that point to the city, or $1.25 ($.95 farm price at 150 mile-point +
$.30 transportation costs to market = $1.25). Similarly, the f.o.b. city
price of 3.5 percent milk will be the farm price of milk used for cream at
a point 100 miles from the market plus the cost of transporting fluid milk
to the market, or $2.05 ($1.05 farm price at 100 mile-point + $1.00 trans-
portation costs to market = $2.05).

Therefore, under the conditions assumed the prices for milk and
milk products. f.o.b. city would be as follows:

1. Fluid milk - $2.05 per hundredweight.

2. The cream equivalent of 100 pounds of 3.5 percent
    milk - $1.25.

3. The evaporated milk equivalent of 100 pounds of
    3.5 percent milk - $1.10.

4. The butter equivalent of 100 pounds of 3.5 percent
    milk - $1.00 (assumed, but of course a different
    price f.o.b. the market for the butter equivalent
    of 100 pounds of 3.5 percent milk would be associ-
    ated with different prices for the other milk
    products than those computed above).

Under the conditions assumed it is also obvious that milk would
not be shipped to the city to be processed into the several dairy products

(except in case of error or lack of knowledge with respect to the most profitable channel of disposal, which is not possible under the assumptions set forth). Prices in the city would be quoted for milk, cream, evaporated milk and butter. All milk brought to the city would command one price, cream another, etc. Thus, there would be no differentiation in milk prices f.o.b. city.

The farm price for milk at any given point within any particular zone is, of course, equal to the farm price of milk at the outer edge of the zone plus the difference between the cost of shipping milk in the particular form to the market from the outer limit of the zone and the cost of shipping such milk from any given point within the zone. The farm price structure for milk that would obtain under the conditions set forth above is shown in Figure 5.

C. The price structure; varying quality requirements - decentralized processing.

If the assumption that all milk is of uniform quality is discarded, and it is assumed that the quality requirements for milk used in the form of fluid milk and cream are higher than those for milk used in the production of evaporated milk and butter, then the type of market under analysis is somewhat more comparable to the rather complex type of milk market now obtaining in many large urban areas.

Sanitation requirements vary somewhat between milk markets. Usually, the requirements cover such items of sanitation as periodic veterinary examination of cows, cleanliness of cows, cleanliness of dairy barns in addition to specifications with respect to the type of flooring, light, etc., specifications with respect to the type and care of the milk house, cleaning and care of utensils, and rules and regulations pertaining to milking and handling of the milk.

It should be obvious that the sanitation requirements under which milk for fluid milk and cream is produced, which in by far the larger number of cases are more stringent than the sanitation requirements under which milk for manufacturing purposes is produced, operate to increase the cost of producing milk for use as fluid milk and cream relative to the cost of producing milk for manufacturing purposes. Thus, over a period of time, the supply price [3] of a given volume of milk used for fluid milk and cream will be somewhat higher than the supply price of the same volume of milk used for manufacturing purposes, other factors remaining constant. Of course, the difference between the supply prices of milk produced for use in different products in any milk supply area, other factors being the same, will depend upon the differences in the sanitation requirements applicable to milk produced for use in the different products. If it were assumed that sanitation requirements raise

---

[3] The price that must be paid in order that a given volume of milk of the desired quality be forthcoming.
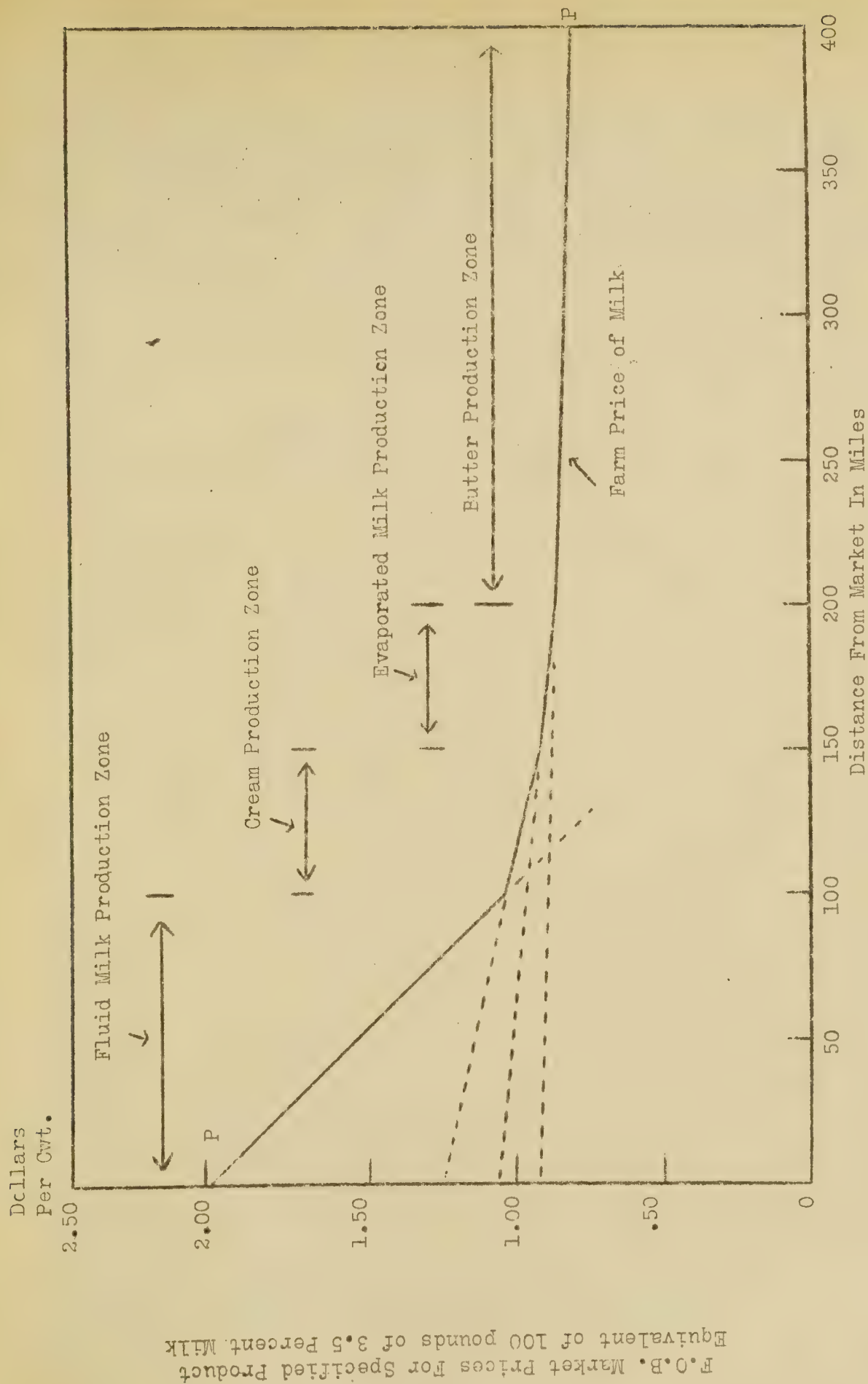
FIGURE 5. — PRODUCTION ZONES AND FARM PRICE STRUCTURE, FOR SPECIFIED DAIRY PRODUCTS AS DETERMINED BY THE TRANSPORTATION RATE STRUCTURE

the supply price of milk for use as fluid milk and cream 20 cents per hundredweight per farm above the supply price per hundredweight for milk used for manufacturing purposes, the price structure under the assumed conditions would be similar to that set forth in Figure 6 (a position of stable equilibrium is assumed, so that the f.o.b. city prices that prevail, and the farm price structure arising therefrom, are normal supply prices).

Under the conditions assumed, the prices for milk and milk products f.o.b. city would be as follows:

1. Fluid milk - $2.25 per hundredweight.

2. The cream equivalent of 100 pounds of 3.5 percent milk - $1.45.

3. The evaporated milk equivalent of 100 pounds of 3.5 percent milk - $1.10.
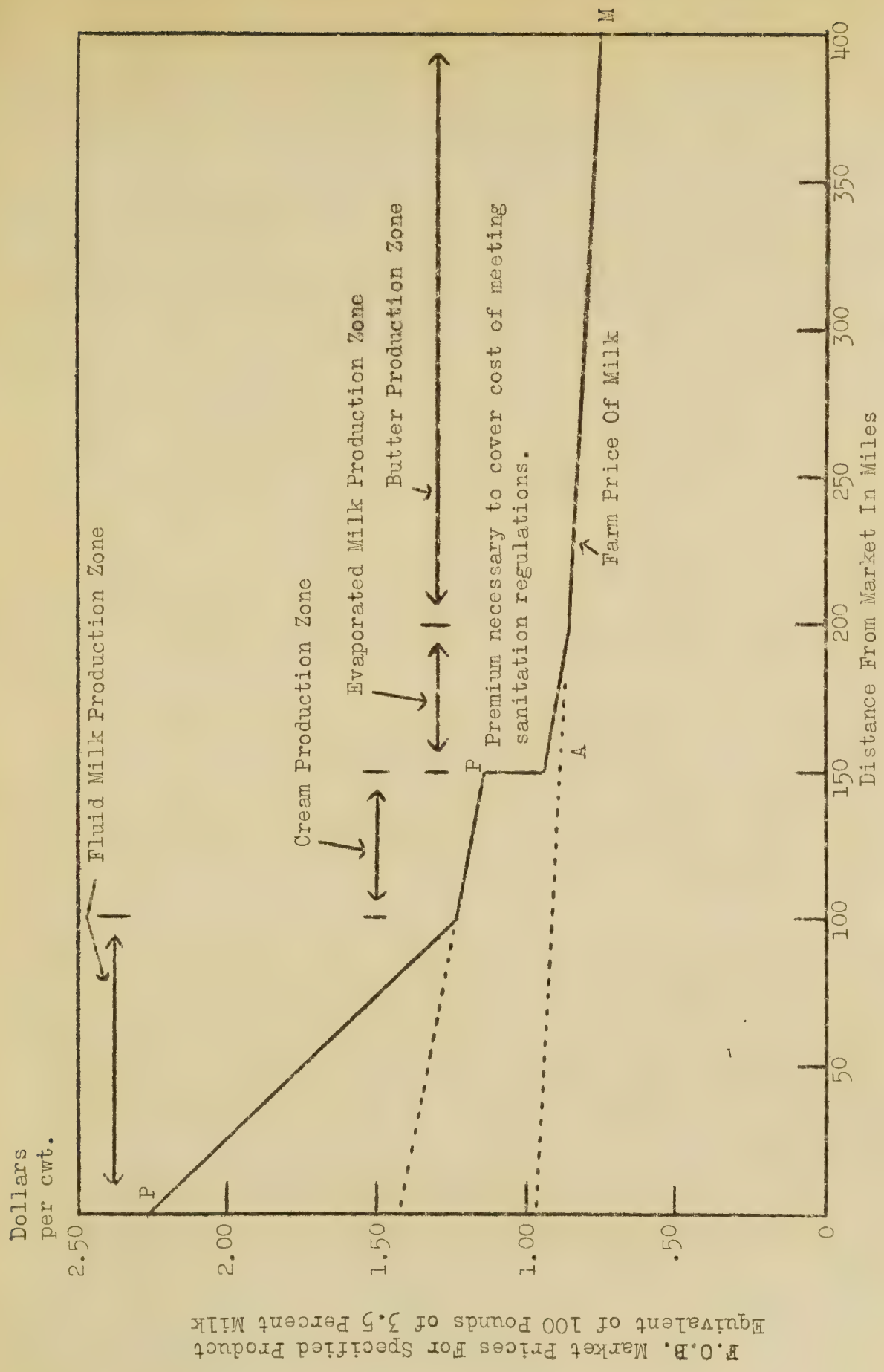
FIGURE 6. - PRODUCTION ZONES AND FARM PRICE STRUCTURE FOR SPECIFIED DAIRY PRODUCTS AS DETERMINED BY THE TRANSPORTATION RATE STRUCTURE AND SANITATION REGULATIONS FOR FLUID MILK AND CREAM.

4. The butter equivalent of 100 pounds of 3.5 percent milk - $1.00.

In Figure 6, the line PP represents the farm price of milk used for fluid milk and cream; the line AM the farm price for milk used in the production of evaporated milk and butter. It should be noted that as yet no factor has been introduced that will operate to establish different prices for milk f.o.b. the city. Under the assumed conditions, all milk produced within a particular zone will be used in the production of the same product. Thus, no milk will be shipped to the market as milk from the cream zone, etc. Stated differently, there will be no differentiation between the price of milk based on the form in which such milk is sold f.o.b. city. Also, no factor has been introduced that will operate so that individual producers will receive different prices for different portions of their milk. Producers within each zone will sell all of their milk at one price. Farm prices in a particular zone will vary as transportation costs from different points in the zone to the city vary, and will vary between zones because of differences in transportation costs of milk and the product equivalent of milk, and because of differences in cost of producing milk engendered by differences in the sanitation regulations applicable to milk and milk products.

D. **The price structure as affected by type of transportation.**[4]

It should be emphasized that the foregoing treatment of the effects of the transportation rate structure and sanitation requirements on the price structure for milk has been greatly simplified for purposes of presentation. Variations in the transportation rate structure and sanitation regulations from those assumed bring additional complexities into the price structure.

One of the assumptions on which this analysis has been based so far is that transportation rates vary according to distance and weight only. However, several factors influence transportation costs, the more important of which are type of transportation (truck, tank car and railroad), complementary services, topography of country, volume, labor conditions, gasoline and truck costs, and local transportation arrangements. Some attention will be given to the effect of these various factors on the price structure and size of sheds for the different types of dairy products.

---

[4] This section is based largely upon a report prepared by Dr. J. M. Tinley, formerly Principal Agricultural Economist, Dairy Section.

1. Type of Transportation. From points relatively close to a market, producers frequently find it advantageous (or less costly) to transport their own milk to the city. Many producers use small trucks to transport feed, implements, etc., from the city to their farms or from one part of the farm to another and find it convenient to take their milk direct to a city plant. The farmer or a member of his family operates the truck and because of proximity to the city can reduce operating costs per cwt.-mile to a very low figure. However, as distance from the city increases, operation of a small truck per hundredweight milk increases rapidly. A large load becomes more economical so larger trucks are used. Few farmers have sufficient milk to supply a load for a large truck, so either a distributor, a private agency (hauler) or a cooperative association operates a truck and collects milk from several farmers.

After a certain distance varying between, say, ten and sixty miles, depending upon the topography, density of supply, etc., truck transportation becomes too expensive per hundredweight mile. It is expensive to operate a large truck (or truck and trailer) over country roads especially as production often becomes more scattered as distance from a city increases.

Under these conditions, milk is usually hauled by producers or by truck to a centralized country assembling point, cooled and loaded into a tank truck and hauled into the city. Also, there are definite limits to the distance from which milk can be hauled by tank truck. In some of the larger markets, milk is collected at country stations and cooled, and then shipped by train to the consuming center. In a few instances, milk is processed and bottled at a country point and shipped into the city for distribution.

In Figure 7 are shown, hypothetically, the transportation costs on milk into a large consuming center.5/ For the first ten miles, milk producers will haul their own milk, the lowest cost being five cents a hundred pounds (most of which is for handling costs). The total cost rises as distance from the consuming center increases, but after about fifteen miles, costs rise very rapidly. There is a zone in which milk may either be handled by the producer or by truck. From about twenty miles, however, it becomes more economical to haul by truck. This is probably true up to about seventy miles. From seventy to ninety miles is another zone of indeterminateness in which milk may be hauled either by truck (in cans) or assembled and hauled in tank truck.

_____

5/ The variations here discussed are not considered in later Figures. Therefore, a different set of rates has been assumed, under which the differences in rates have been magnified.

Cents Per
Hundred
Pounds

Local Handling By Producer

Zone Of Indeterminateness,
Local Hauling Or By Truck

Truck Hauling

Zone of Indeterminateness
Truck Hauling or Tank Truck

Local Assembling, Cooling
and Tank Truck

Zone Of Indeterminateness
Tank Truck or Railroad

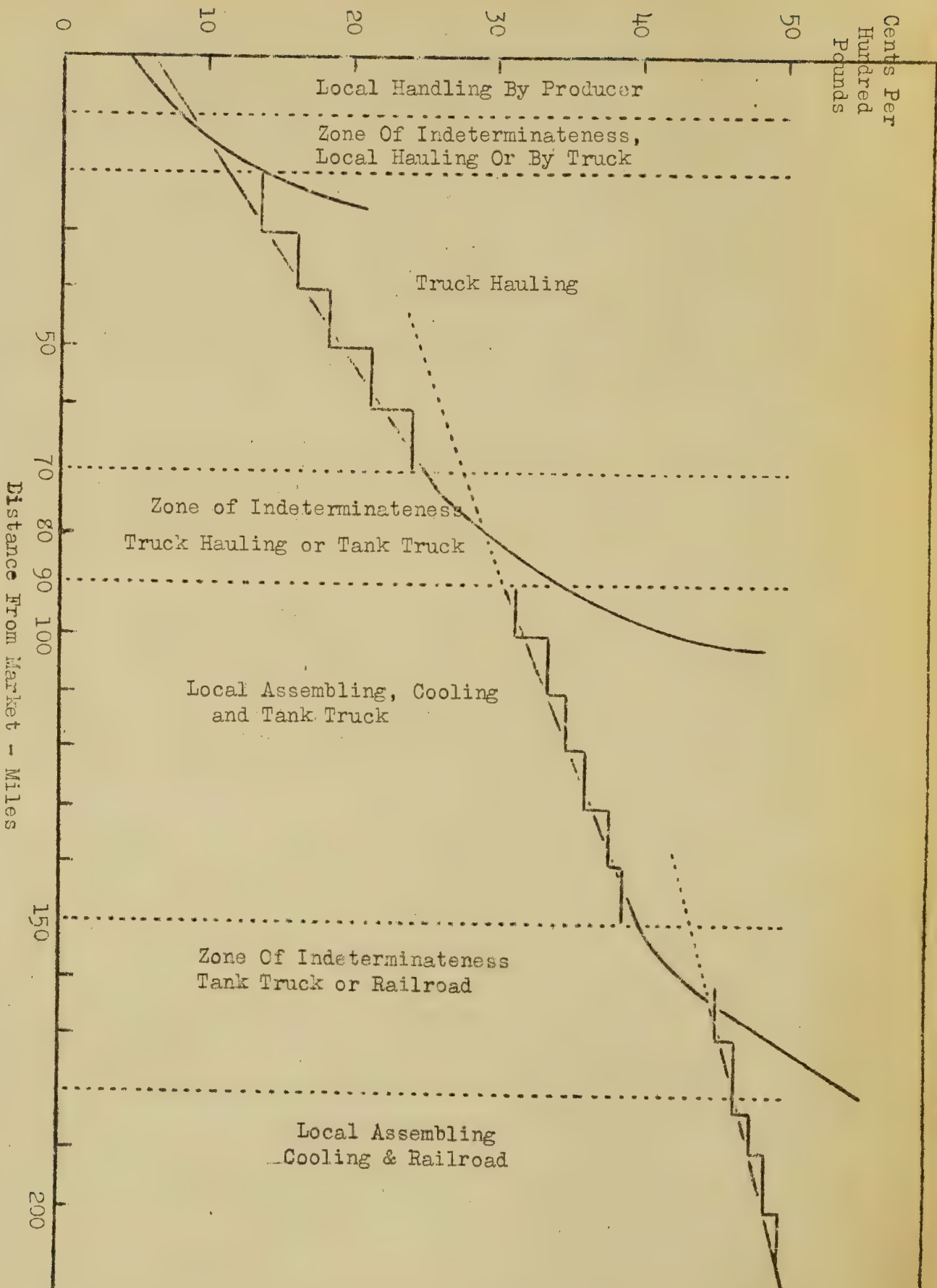Local Assembling
Cooling & Railroad

Distance From Market — Miles

FIGURE 7. — THE INFLUENCE OF TRANSPORTATION RATE STRUCTURE UPON THE
PRICE STRUCTURE FOR MILK 1/

1/ See text for assumptions on which diagram is based.

From ninety to one hundred and fifty miles, milk will be hauled in tank trucks, but for greater distances the time of hauling and load limitation would tend to make it more economical to assemble milk at a country plant and transport milk to city by train. There is a zone of indeterminateness from 150 to 180 miles in which milk may be hauled either by tank car or by railroad.

These distances would vary from market to market depending upon topography, state of roads, density of supply, relative costs of different methods of transportation, etc.

Transportation rates are commonly set on the basis of zones, under which rates, instead of increasing directly in proportion to distance, increase in a series of steps as is shown in Figure 7.

2. Complementary Services. Transportation rates usually include some elements of cost other than mere hauling. Milk has to be loaded and unloaded, iced or refrigerated. These are usually more or less fixed costs and do not vary with the length of haul. Thus the longer the distance hauled the lower these costs become per mile, resulting in a tendency for transportation rates per unit to decline as distance increases.

There is somewhat greater risk in hauling milk than in hauling butter -- milk has to be handled with more care and speed. For this reason a particular transportation agency may charge a higher rate for hauling an equal volume or weight of fluid milk than for butter or evaporated milk.

3. Rate Schedules. Many transportation agencies, especially railroads, do not arrange their rate schedules by miles, but by zones. It is thus possible that the rate will be the same on milk hauled 101 miles and 120 miles.

4. Topography of Country. Transportation costs per mile are usually somewhat higher in mountainous and hilly country than in flat, level country. This is due to the fact that more fuel is consumed, fuel costs are themselves high, there is more strain on vehicles and speed is greatly reduced. The condition of the roads is also important. Narrow, winding roads greatly reduce the speed of trucks and to a certain extent regulate the type of trucks that can be used.

5. Volume of Milk. Where dairies are small and scattered, the costs of collecting milk are considerably higher than where production is more concentrated. Frequent stops to pick up small quantities of milk and a long distance between stops materially increase hauling costs.

Railroads usually charge different rates, depending upon whether the commodity is hauled in carlot or less than carlot units.

6. **Labor Conditions.** An important part of hauling costs is the expenditure for truck drivers and mechanics. In cities where labor is cheap, rates may be somewhat lower than where wages are high.

7. **Gasoline and Trucks.** The prices of gasoline, oil, trucks and spare parts vary considerably in different parts of the country. This may have a material influence on hauling costs in different localities.

8. **Control of Hauling.** In some markets, all transportation is handled by one agency or by not more than two or three agencies. This reduces overlapping of routes to a minimum and should result in lower unit operating costs. In other markets, each producer or each distributor undertakes to make his own hauling arrangements. In such markets, a great deal of overlapping may occur. Efficient use is not made of transportation facilities, and consequently rates will tend to be higher than where there is centralized control of hauling.

The foregoing serves to indicate some of the factors that affect the transportation rate structure for milk.

E. The price structure as affected by the type of sanitation regulations.

Some of the factors that must be taken into account in determining how sanitation requirements affect the price structure for milk in different milk sheds and for a particular shed are as follows:

(1) The sanitation regulations in force in the milk shed. sanitation regulations are much more stringent in some markets than in others. There is, therefore, no possibility of developing a generally applicable cost figure which could be applied to the price structure for milk within a particular market and used in the practical determination of milk prices within a particular milk shed.

(2) The cost of meeting sanitation regulations, even though the regulations are the same in some markets as in others, may be widely different. Labor and material prices may vary materially between different markets, so that, even though the regulations may be exactly the same between particular markets, the cost of meeting the sanitary regulations may vary materially.

(3) In addition, health and sanitation regulations may be of such nature as to permit only those producers located relatively near the market to qualify as fluid milk producers. For example, the imposition

of a regulation requiring that fluid milk shall be delivered to the consumer within a given number of hours from the time it is produced would automatically set a maximum distance over which milk could be transported and might reduce materially the area from which fluid milk could be shipped to the market. In this case the price for fluid milk would increase until consumption was reduced, or until production within the area was increased, or both, to the point where the market would just use the milk produced within the new zone. This, of course, would increase the price spread between fluid milk and the product equivalent of milk used in other dairy products f.o.b. the market, and would increase the farm prices of fluid milk relative to the farm price of milk used in the production of other dairy products.

Also, sanitation regulations may not increase the costs of meeting the sanitation regulations by the same amount per unit of product on all farms. Some farms are better equipped than others and hence have smaller additional expenditures to meet requirements. Large dairies can ordinarily utilize equipment more economically and, therefore, their cost per unit for milk houses, cooling equipment and other outlays commonly required by health and sanitation regulations is lower. Such dairies have their competitive position improved by the raising of inspection requirements and may increase their production. Others may tend to shift to cream, or butter production, rather than make the additional outlays necessary. Depending upon these effects on supply, zones from which the various products are shipped to the market may be either enlarged or reduced by the imposition of or changes in the sanitation regulations.

While this discussion of the price structure has been developed entirely in terms of transportation costs and costs of meeting health and sanitation requirements, it should be apparent that variations in costs resulting from other causes will work out in practically the same manner. The important distinction is between the effects on the price structure of those costs which vary with distance from market, as does transportation, and costs which are likely to be rather uniform regardless of distance from the city. The influence of each of these types upon the price structure for milk is illustrated in a general manner by this analysis of transportation costs and costs of meeting health and sanitation regulations.

Variations between farms, such as those due to available equipment, type and condition of herds, type of land, labor supply and even personal preferences, will partially determine which farmers will produce milk for the various uses. Also the relative significance of these latter factors becomes greater as class differentials become smaller near the boundaries of zones. Therefore, their principal effect

is to cause the boundaries between the areas in which the several classes
are produced to be less clearly defined than would be indicated by the
simplified example set forth in the analysis.

(4) Also, there are higher sanitation regulations for fluid milk
than for cream in some markets. This operates to establish higher
supply-prices for milk produced for use as fluid milk than for milk pro-
duced for use as fluid cream.

The foregoing serves to indicate in a general way the manner in
which sanitation regulations affect the price structure for milk within
a milk shed, and how differences in the sanitation regulations may affect
the price structure in different milk sheds.

F. The price structure; decentralized processing - uniform
quality requirements - variations in production.

The manner in which the transportation rate structure and sanita-
tion regulations affect the price structure for milk within a milk shed
has been set forth in some detail in the preceding pages. In order to
approach more nearly the price structure for milk as it actually exists
in many milk markets consideration will be given to the price structure
under the conditions that prevail when the assumption that there is no
variation in production is dropped.

There are marked variations in the production of milk, which are
perhaps most easily classified on the basis of time periods, such as day
to day, week to week, year to year, and long time variations. There is
some day to day variation in production, although this type of variation
is undoubtedly negligible. The seasonal variation that takes place in
milk production within most milk sheds 6/ is marked, production in the
fall and winter months usually being much less than production in the
spring and summer months. This type of variation is due largely to such
factors as (1) the greater supply of succulent feed available during the
pasture season, (2) time of freshening of cows, (3) inclement weather
during the winter months, etc. In some areas, the seasonal variation
in production is much more extreme than in others 7/ and even within the
same area, production often shows a more marked seasonal variation in
some regions than others within the area.

Year to year changes in production are due to such factors as
(1) differences in feed production conditions that are associated gen-
erally with differences in weather and growing conditions, (2) shifts
into and out of the dairy business due to changes in the relative

6/ Ross, H. A., Cornell University, Agri. Exp. Station Bulletin No.527;
    also based on production data secured with respect to the markets
    operating under Federal milk licenses.
7/ Based on production data secured with respect to the markets oper-
    ating under Federal milk licenses.

profitableness of milk production as compared to other types of agricultural production, (3) other factors that may operate intermittently, such as the imposition of a sanitary regulation to the effect that all milk sold in the market as fluid milk and cream must come from cows free from tuberculosis, which may operate to cause a marked decrease in the number of milk cows within the area, reduce production within the area quite markedly for a short period, and necessitate a temporary increase in the size of the milk shed.

Cyclical and long-time changes in production are probably associated with long time trends in demand, such as changes in the consuming habits of the people, the ebb and flow of population in urban centers and other factors such as changing opportunity cost relationships and type of farm organization and operation which set the limits of expansion of production within a given area, etc.

Seasonal variation is one of the most important types of variation in production. For purposes of presentation, therefore, the manner in which seasonal variation in production affects the price structure for milk within a milk shed is considered, with all other types of variation in production noted above held constant. [8]/

For most milk markets the volume of milk sold to consumers as fluid milk and cream varies somewhat from season to season, but the production of milk varies much more seasonally. Thus, during the period of low production, the production of milk within a milk shed may be just sufficient to meet market requirements (an amount about ten percent in excess of average daily sales), while during the season of flush production the volume of milk produced within the milk shed is usually far in excess of market requirements.

For purposes of presentation, it is assumed that (1) during the period of low production the volume of production within the 100-mile zone (see Figure 5) is equal to market requirements for fluid milk, (2) the sanitation regulations are the same for all milk regardless of the form in which it is sold, (3) production varies seasonally, (4) there is no difference between the seasonal production curves of individual producers, and (5) there are no variations in consumption other than daily. Under these conditions, there are several lines of procedure which distributors might follow with respect to purchasing milk from producers, such as (1) expanding and contracting the area from which milk is secured inversely to the expansion and contraction of milk production, (2) taking all the supply of milk produced within a given area (wherein the supply during the period of low production is just sufficient to meet the market requirements for fluid milk)

8/ For ease in presentation, the examples used to explain certain points are stated in terms of fluid milk only throughout the remainder of this paper. The same treatment is applicable in a general way to other dairy products.

and paying producers prices low enough to enable distributors to secure a high enough margin on fluid milk to cover the losses incurred in handling manufacturing milk during the period when supplies are larger than fluid requirements, or (3) purchasing milk from producers under a price arrangement which encourages producers to produce an even volume of milk throughout the year.

If distributors elected to secure their market requirements for fluid milk by contracting and expanding the area from which they draw their supplies inversely to the seasonal variation in production, refusing to take the production of distant shippers during the season of low production, the zones from which fluid milk would be drawn at different periods of the year would show marked difference from that shown in Figure 5. If, during the period of low production the volume of milk produced in the area within 100 miles of the market were sufficient to meet fluid requirements, the volume of milk produced within this zone would be far in excess of fluid requirements during the period of heavy production. For example, if the volume of milk produced during the peak production period were 40 percent above that produced in the low production period, the milk shed would be markedly contracted, about 40 percent in area if the density of production were constant throughout the area, but more than this if, as is often the case, the density of milk production declines as distance from market increases.

Assuming that the price of milk during the low production period were $2.05 f.o.b. city, and the farm price structure the same as that indicated in Figure 5, the f.o.b. market price during the period of high production would be less than the f.o.b. market price during the season of low production by an amount equal to the saving in transportation costs involved in securing the supply of milk closer to the market during the flush period, and would vary between these limits during the year, depending upon the extent of the area wherein the volume produced was needed to meet fluid requirements. The farm prices would vary in the same manner, being equal to f.o.b. market prices less the cost of transporting milk to the city.

There are several factors, however, that operate to cause distributors to secure their milk from the same area throughout the year, rather than expanding and contracting the geographical scope of their operations to secure only that milk needed to meet fluid milk requirements. It is a matter of grave concern to the distributor that he be assured of a volume of milk sufficient to meet his market needs. Therefore, the risk involved in dropping a source of supply during the season of flush production, when it is practically certain

that that source will be needed during the season of low production, is a factor operating to check such action, since the distributor can never be certain that some competitor will not immediately furnish the shippers he dropped with an outlet for their milk, thereby forcing him to seek even more distant sources of supply during the season of low production.

Another factor of importance in this connection is that related to the costs of procuring milk from a rather constant area, as compared to the cost of procuring milk from an area that varies markedly throughout the year both in geographical extent, and the number of individual sources of the raw material. It undoubtedly costs less to procure milk from an area that stays rather constant with respect to geographical extent and number of producers, than from an area that varies markedly throughout the year in geographical extent and number of producers. Some of the savings are: (1) there are fewer field men needed to contact producers and secure their patronage, (2) bookkeeping and office expense is lower due to the fewer number of producers for whom accounts must be kept, statements must be prepared, and to whom payments must be made, (3) fewer laboratory tests have to be made, resulting in savings in laboratory technician labor costs, laboratory supplies, etc., (4) fewer individual containers have to be handled, involving savings in receiving labor, can washing, and sampling, and (5) there is less cost involved in furnishing various services to producers. It appears, then, that distributors can afford to pay producers a premium for evenness of production, so that they may, through the payment of such premium, secure the volume of milk needed by them to meet their fluid milk requirements from an area smaller in extent geographically, and in numbers of individual sources of supply, rather than securing their supply from an area that contracts and expands markedly as production decreases and increases seasonally. The amount of the premium distributors can afford to pay in this connection is the difference in the costs of procuring their milk supply from an area that remains practically constant in geographical extent and in number of individual sources of supply, and the cost of procuring milk from an area that varies markedly in geographical extent and the number of producers from whom milk is purchased.

There is another factor that exerts a tendency to cause the distributor to pay producers a premium for evenness in production. It has been pointed out previously that a volume of milk perhaps 10 percent in excess of average daily sales must be brought to market to meet daily variations in the volume of milk sold to consumers as fluid milk. In order to handle this volume of excess milk, which might be termed the daily operating reserve, the distributor has to integrate a by-product

enterprise with the main enterprise, or find some other channel of disposal. However, as far as this operating reserve is concerned, it is of such constant volume[9]/ that efficient methods of disposal as manufactured products can be developed. It is the marked variation in the seasonal excess and the difficulty of handling it efficiently that is an important factor in leading distributors to endeavor to secure a more even volume of supplies. This arises because more efficient methods of handling the excess can be developed when the supply is constant than when it varies markedly. Thus, during the season of flush production the distributor has to convert to other uses, or someone else does it in his stead, a volume of milk that may be several times as great as the volume so converted during the season of low production. This may be demonstrated by reference to some assumed figures, as follows:

1. The volume of milk sold daily as fluid milk throughout the year is 10,000 pounds.

2. The volume of milk brought to market is 11,000 pounds (10 percent of average daily sales needed to meet daily variations in fluid milk sales) in the season of low production and 14,000 pounds during the season of flush production.

The volume of milk that is diverted to uses other than fluid milk is therefore 1,000 pounds per day during the season of low production and is 4,000 pounds per day during the flush period, or 3,000 pounds greater than during the low period. This is entirely a seasonal excess (3,000 pounds of the 4,000) and represents an increase in the output of products other than fluid milk of 300 percent. Of course, under actual conditions, the increase in the volume of milk diverted to uses other than fluid during the flush season will be dependent upon the actual seasonal variation in production, which will, in some cases, be greater, and in other cases less, than indicated in the above example.

The seasonal excess in production therefore raises serious questions as to how it may be handled efficiently. It undoubtedly costs far more to handle a volume of excess milk that fluctuates markedly from season to season, as does a seasonal excess, than it costs to handle a volume of excess milk that remains rather constant from season to season. This is due to the fact that equipment, and in many cases labor, must be available to handle a peak load far in excess of the load during the period of low production when only a small volume of milk, equal to about 10 percent of average daily sales,

---

9/ Assumed, but practically all available data indicate that it is actually quite constant.

is converted to uses other than fluid milk. The distributor, therefore, can afford to pay a premium for evenness of production in addition to that already noted, the size of the premium being approximately equal to the difference in costs involved in handling a constant volume of excess (the operating reserve) as compared to handling a widely fluctuating volume of excess milk (the seasonal excess).

The foregoing indicates that distributors are able to pay a premium for evenness in production. It appears that it would be a matter of indifference to distributors whether they paid a given sum of money, including premiums for evenness of supply, to secure a particular volume of milk, or paid a sum of money about equal to the former for a similar volume of milk, the latter sum, however, being paid partly to producers delivering an uneven volume of milk, and partly for extra costs involved in procuring milk from an irregular area. In the former case, the farmer gets a higher percentage of the total volume of money expended for milk purchases and operating costs by the distributor than in the latter case, but total costs to the distributor remain about the same. It is probable that it is a matter of indifference to distributors whether they pay out a given sum of money in the one manner or the other. If distributors elect to secure their milk supply without paying producers a premium for evenness in production, it is evident that the seasonal variation in producers' prices would be quite marked.

It is, obviously, more economical to secure milk that is to be sold as fluid milk from sources near the market and to process the seasonal excess into milk products other than fluid milk at points outside the area wherein production is just necessary to meet fluid requirements, since the cost of transporting the fluid milk equivalent of manufactured dairy products from any given point is much greater than transporting such products to market in finished form. Of course, the extent of the saving will depend upon the size of the area and the like. Thus, during the period of flush production, fluid milk would be drawn from a point much nearer to market (depending upon the seasonality in production and relative density of production throughout the area) than during the season of low production. F.o.b. market prices for fluid milk during the year would vary directly with differences in costs of transporting milk from different points within the area. Thus, if milk is transported only 50 miles during the flush period and 100 miles during the low period, f.o.b. market prices, assuming transportation costs of 1 cent per hundredweight per mile, would vary within a 50-cent range during the year, being 50 cents higher during the period of low production than in the period of high production. Farm prices would vary in the same manner, being equal to f.o.b. market prices less transportation costs.

If, however, milk is brought to the market in fluid form and is then diverted to more concentrated forms such as cream, evaporated milk and butter, the product equivalent of such milk will sell at prices f.o.b. the market equal to the price at which the product can be shipped to the market from distant areas. Thus, if the butter equivalent of milk can be brought to the market from distant sources for $1.00 f.o.b. the market (farm price plus transportation costs on the butter equivalent of 100 pounds of milk), the butter equivalent of milk brought to the city in fluid form will sell for only $1.00 f.o.b. the market. The farm price of such milk would be materially less than $1.00 per hundredweight. For example, if milk is shipped 50 miles and transportation costs are 1 cent per hundredweight per mile, the cost of transporting a hundredweight of such milk is 50 cents. If the product equivalent of such milk sells for $1.00 f.o.b. the market, then the farm price of such milk would be 50 cents. Of course, if such milk is shipped any great distance as fluid milk, the product equivalent f.o.b. the market may not sell for enough to more than cover transportation costs from the farm to the market. Therefore, if milk is shipped to the market in fluid form for any appreciable distance and then converted to more concentrated products, farm prices for fluid milk are decreased appreciably. Under these conditions the seasonal variation of prices paid producers would be much more pronounced than that obtaining under the conditions treated previously.

G. The price structure, decentralized processing, special quality requirements for fluid milk - variations in production.

The seasonal variation in prices to producers would be even more marked than under the conditions treated previously if there were higher quality requirements for milk produced for use as fluid milk than for milk produced for use in other products.

This can be demonstrated quite readily by reference to the following example wherein it is assumed that (1) distributors bring to the market only that milk needed to meet their fluid requirements, which are assumed to be constant; (2) the area from which the fluid milk is drawn is contracted and expanded inversely to the seasonal variation in production; (3) distributors contract with producers to take their milk only for the periods wherein it is needed (obviously, under this sort of an arrangement the milk of some producers would be used as fluid milk all of the time while that of others would be so used at only certain specified seasons in the year); (4) the cost

of meeting sanitation requirements, if all milk were sold as fluid milk during the year, would be 20 cents per hundredweight per producer; (5) the alternative farm value of milk sold for any other purpose is $1.00 per hundredweight; (6) transportation costs vary uniformly with distance, at one cent per hundredweight per mile; (7) during the season when the milk of producers in outlying areas is not needed for fluid milk uses, there are plants available for manufacturing it into other dairy products.

Under these circumstances the total yearly cost of meeting fluid milk requirements for outlying producers, or, rather, for those producers who sell their milk as fluid milk for a short period during the year, would have to be covered in a much higher farm price for the months during which they sell their milk as fluid milk.[10] Under these assumptions, a producer selling his milk as fluid milk during the entire year would incur only 20 cents per hundredweight additional expense for meeting sanitation regulations. On the other hand, the producers who sold milk as fluid milk one month of the year would incur equal expenses over the entire year, or approximately twelve times as great per unit for the month during which such milk is sold as fluid milk. Thus, during the season of low production the farm price must be sufficient to cover, during one month, the entire cost of meeting sanitation regulations for the entire year, which, in the assumed case, would amount to approximately $2.40 per hundredweight above the alternative use value for milk at the farm. The operation of this factor is depicted graphically in Figure 8.

Under these assumptions the f.o.b. city price (farm price plus transportation costs) ranges from $2.20 per hundredweight during the month of high production to $4.95 per hundredweight during the month of low production. If, as assumed, distributors purchase a uniform quantity of milk per month, the weighted average price would be approximately $2.90 per hundredweight. If, however, production within the area within 100 miles of the market (see Figure 8) were uniform from month to month at a level equal to production during the month of high production obtaining in the example set forth above, the f.o.b. market price throughout the year would be $2.20 per hundredweight as compared to the weighted average price of $2.90 per hundredweight prevailing under the conditions as set forth in the previous example. If, therefore, the distributor

---

10/ Of course, part of the expenses of producing milk in conformance with the sanitation regulations is fixed, and part of them is variable. This introduces an additional complexity, and probably operates to change the seasonal price curve from that set forth in this analysis. However, it does not appear necessary to develop this point further for the purposes of this paper.
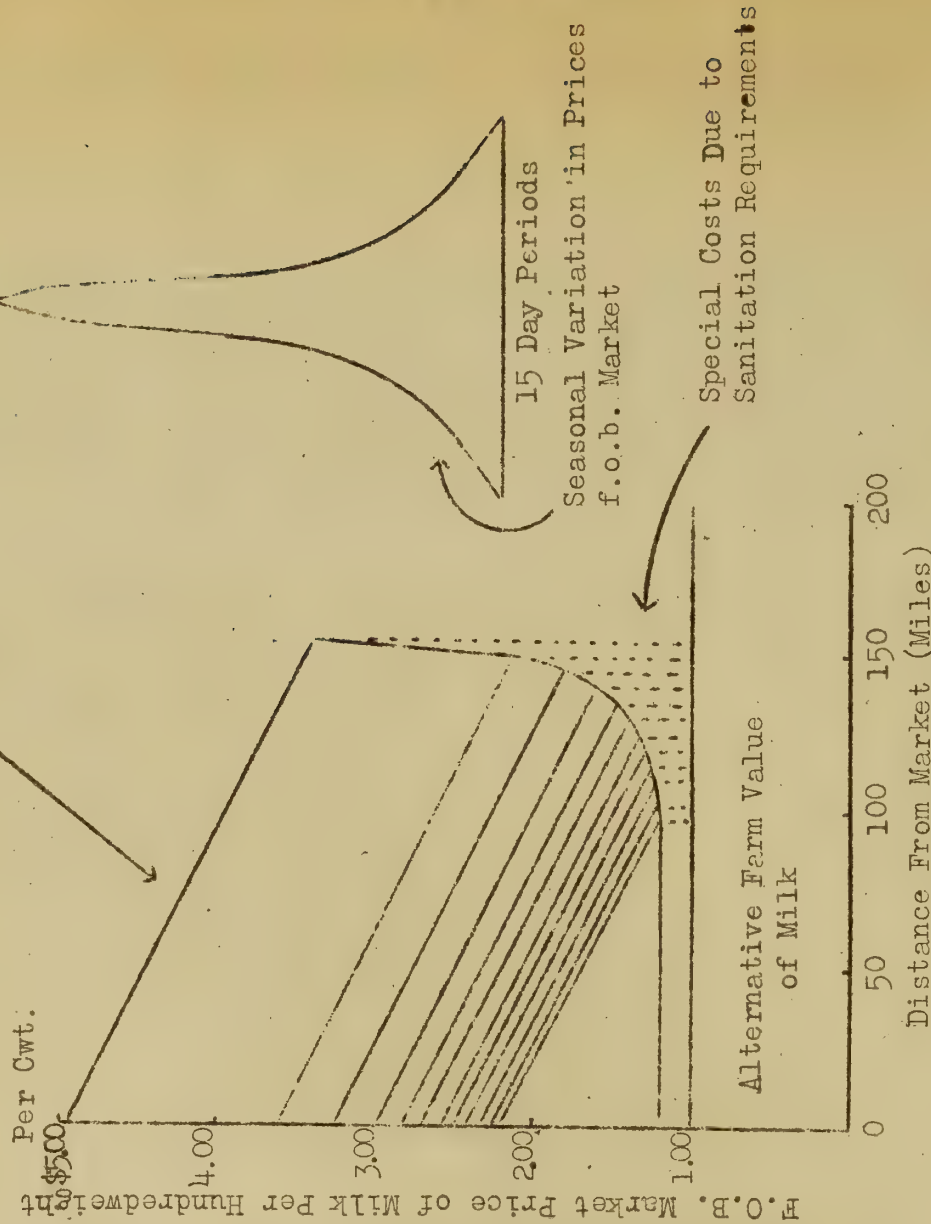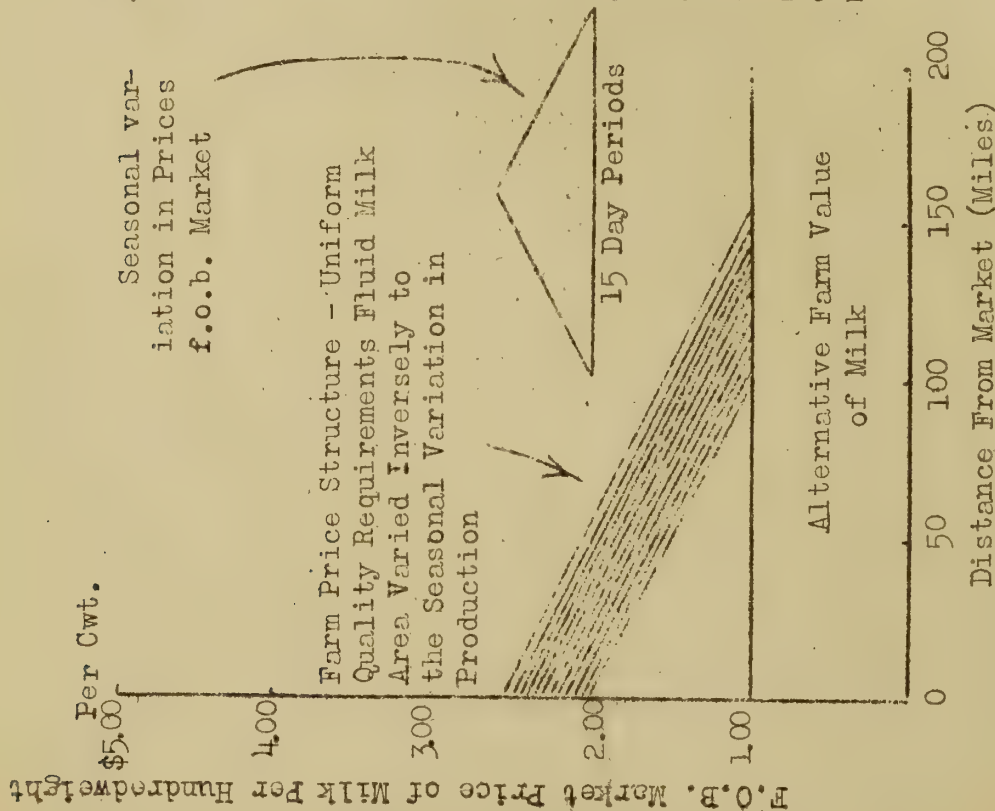
FIGURE 8. - THE PRICE STRUCTURE FOR FLUID MILK WITH DECENTRALIZED PROCESSING, SPECIAL QUALITY REQUIREMENTS FOR FLUID MILK ASSUMED.

could procure his milk supply from producers who produce a constant volume of milk throughout the year, it is to his best interest to do so, since he could secure his milk supply for less total cost then would be the case otherwise. [11]/

It should be noted that the marked seasonal variation in prices, which in any particular market would be different from that set forth above, depending upon the degree to which conditions in the market and the supply area vary from those assumed in the example, would in time be partially corrected by producers within the area changing their seasonal output curves in order to sell a larger volume of milk during the period when prices are seasonally high. However, it would be greatly to the advantage of some producers to shift their seasonal output curves, and little if any to others, depending upon the type of farm organization and operation followed by each.

It has already been indicated that distributors can afford to pay producers in such a manner that evenness in production is encouraged, due to the economies in procurement costs in securing milk from an area that is rather constant geographically and in number of individual sources of supply rather than an area that varies markedly in geographical extent and in the number of individual sources of supply. Also, it has been indicated that the economies involved in handling a minimum and rather constant volume of excess milk furnish an incentive for distributors to pay producers in such a manner that evenness in production is encouraged, in addition to the incentive noted above.

Heretofore it has been assumed, for purposes of analysis, that there is no difference between the seasonal production curves of individual producers. This assumption is now discarded and the analysis focused upon conditions more nearly in accordance with those that prevail in actual markets. It is well recognized that there are marked differences between the seasonal production curves of different groups of producers as well as individual producers. [12]/ Thus, in any particular milk market there are many producers who produce milk practically in accordance with fluid milk needs, while others do not.

11/ For purposes of presentation and emphasis, this example has been exaggerated.

12/ Lininger, F. F , Pennsylvania State College, Agricultural Experiment Station Bulletin No. 231, also based on unpublished data in the files of the Dairy Section.

A brief consideration of the types of distributors and processors operating within any particular milk shed will now be given in order to bring into the analysis the conditions which, taken in conjunction with those set forth in the two preceding paragraphs and in Part III of this paper, suffice to explain why milk suitable for consumption as fluid milk is brought to market, one part of which sells for one price, another part for another, etc., in short, the development of a system of class prices.

In almost any milk market (except as is the case in those small villages and towns where practically all of the milk is distributed by producers) where the economy of the market has developed to the point that distributors have become specialized, different degrees of specialization obtain between distributors. Some distributors sell only fluid milk and/or cream, others sell only fluid milk and/or cream and a relatively small volume of manufactured by-products (butter, cheese, ice cream, etc.) and still others sell some fluid milk and cream and sell a relatively large volume of manufactured dairy products. Within the same area, other processors produce and sell manufactured dairy products entirely. In other words, all degrees of enterprise combinations are to be found, ranging from the highly specialized fluid milk distributor to the relatively as highly specialized manufacturer of manufactured dairy products. The reason for such specialization is, obviously, that the economies in organization and operation gained through specialization are quite marked. This point needs no further proof than that evident to anyone who observes the present organization and operation of industry, both agricultural and non-agricultural.

Under the above conditions, it may appear that it is to the interest of all fluid milk distributors and all processors of manufactured dairy products within a particular area to pay producers in such a manner that evenness in production is encouraged rather than for specialized fluid milk distributors to do this alone. This is true to a certain extent. However, milk is bulky and perishable and the storage of milk is not economically feasible. On the other hand, manufactured dairy products can be and are stored for relatively long intervals. Thus, manufactured dairy products are produced in largest volume during the spring and summer months and are stored until they are moved into consumption. This tends to even out the seasonal variation in the prices of manufactured dairy products. Under these conditions the premium that could be paid producers of milk for use in manufactured dairy products to encourage evenness in supply would be equal to the cost of storage from the flush production period until the product moves into consumption and the savings realized in manufacturing costs when the volume of product

produced throughout the year is constant rather than varying. In addition, the supply areas of individual manufacturing plants are, in most cases, much smaller than the supply areas of individual fluid milk plants so that transportation costs do not affect farm prices seasonally to as great an extent as is the case with fluid milk. Also, there are, in many cases, few sanitation requirements with respect to the production, care and handling of milk produced for use in the production of manufactured dairy products; and, in those cases where there are sanitation requirements with respect to such milk, they are rarely, if ever, of such nature that farm production costs are increased markedly. Thus, sanitation requirements for milk produced for use in the production of manufactured products do not operate to increase the seasonal variation in the price of such milk to any appreciable degree, certainly, in any case, to a much lesser extent than in the case of milk produced for use as fluid milk. These considerations suffice to explain in a large measure why pricing systems pointed to encouraging evenness in production have not developed with respect to milk produced for use in the production of manufactured dairy products.

In view of the foregoing, it appears that there is a wide range in the incentive of different types of distributors to pay producers in a manner that encourages evenness in production. For specialized fluid milk distributors this incentive is quite strong and diminishes in strength in relation to the diminution in the degree of specialization of distributors until, in the case of manufacturers of manufactured dairy products, there is little incentive to purchase milk from producers for evenness so that evenness in production is encouraged. Under these conditions fluid milk distributors will compete with each other to secure the patronage of those producers who produce a rather constant volume of milk throughout the year so that these producers become associated with specialized fluid milk distributors. Further, producers who produce a more variable volume of milk will become associated with less specialized distributors. Stated in other terms, when producers are classified on the basis of their relative seasonality of production, they will tend to become directly associated with distributors in accordance with the relation between the relative constancy of production of different classes of producers and the relative strength of the incentive of different classes of distributors to secure an even volume of supply of the raw material. Thus, within a milk shed different producers will receive different prices for milk, such differences, after adjustments for location differences, being due to relative differences in the seasonal variation of production of different producers. Under these circumstances and providing economic forces have time to work out their full effects, producers who produce a relatively constant volume of milk throughout the year will receive

higher prices than those producers who produce a relatively more
variable volume of milk throughout the year. Furthermore, the
producers who produce a relatively constant volume of milk through-
out the year will tend to be associated with highly specialized
fluid milk distributors (highly specialized in the sense that
the operating unit is engaged almost entirely in the distribution
of fluid milk), while those who produce a relatively more variable
quantity will be associated with distributors who are less highly
specialized (in the sense noted above).

Heretofore, no seasonal variation in consumption of fluid
milk has been assumed. The next step in the analysis is to examine
how (1) various factors operate to establish retail prices for fluid
milk at a practically uniform level throughout the year and, with
small seasonal variation in demand, lead to the development of the
seasonal excess, and (2) the manner in which the bargaining arrange-
ments between producers and distributors affect the price structure
for milk within a milk shed.

PART III

The Utilization of Milk in a Market as Influenced
by the
Nature of the Demand for Milk.

Heretofore the analysis has been developed on the assumption that there were no variations in the amount of milk sold as fluid milk in the market from day to day and season to season, hence, granting seasonal variation in production, it followed that, during the period of the year when production exceeded consumption, a portion of the milk produced for use as fluid milk in a particular area had to be diverted to uses other than fluid milk. This assumption is now dropped, and the analysis is focussed upon the determination of (1) whether there are variations in the volume of milk sold in the market from day to day and season to season, (2) the factors that account for such variations, if any, and (3) whether such variations are or normally may be expected to be of sufficient amplitude to keep the total volume of milk sold as fluid milk in the market equal to the volume of milk produced for use as fluid milk in the area supplying the market. A solution of the problems noted above is to be found largely in a consideration of the nature of the demand for fluid milk and the manner in which milk is distributed to consumers.

When considered in light of the usual supply and demand analysis of the factors affecting the price of any particular commodity, it might be expected that retail milk prices to consumers would be adjusted or changed from day to day and week to week as changes took place in the supply and demand situation. Stated differently, if, on a particular day of the week or during any particular week, milk supplies increased or decreased, it might be expected that retail milk prices (assuming no change in demand) would vary inversely to the changes in supplies, especially in view of the fact that milk is a highly perishable product and cannot be stored advantageously.

As far as actual supply and demand conditions are concerned, there are relatively large day to day variations in demand [13] and relatively small day to day variations in supply. Under these circumstances, it might appear that there would be marked variation in the retail price of milk from day to day. However, it is probable that this pricing procedure would necessitate a type of market organization or mechanism whereby buyers and sellers would meet, or through which buyers' day to day demand schedules and sellers' day to day schedules of reservation prices would

---

[13] This point is developed in more detail later.

be made known and would operate to adjust prices in accordance with the day to day supply and demand situation. This type of market organiza- tion or mechanism would be somewhat analogous to the present produce exchanges. However, such procedure would be markedly different from the present procedure through which day to day retail prices not only of milk but of many other products are established.

Milk is generally distributed to consumers early in the morning, and numerous milk routes are necessary in order that customers be reached. A driver on a milk wagon cannot ascertain what the demand for milk will be on his route until he has completed deliveries. Thus, as a practical matter, it is impossible for him to adjust his prices in accordance with the demand situation as he finds it. The same consider- ations apply to the distributive enterprise as a whole. If the demand schedules of consumers on each milk route, and the aggregate demand schedules of consumers purchasing from each distributor and for the mar- ket as a whole, were known and accurately predictable from day to day, then the dealer could (in theory) quote prices each day on the basis of day to day changes in the day to day supply and demand situation. As a practical matter this procedure would be extremely unworkable. The highly technical nature of the analysis that would be necessary if such procedure were to be followed, the cost of such precise analysis (which would probably have to be detailed enough to allow the determination and forecasting of the demand schedules on many, if not all, milk routes), and the partially indeterminate nature of the results secured would preclude following the procedure outlined. The only practical procedure is for the distributor to quote prices for a longer period of time, rather than to quote prices daily. This is the procedure dis- tributors actually follow and, under these circumstances, day to day variations in the demand for fluid milk (day to day variation in supplies [14] are negligible) are manifest in variations in day to day purchases by consumers at a constant price, rather than being manifest in day to day variations in price.

It may appear, when weekly and monthly periods are considered, that retail prices would change in response to weekly and monthly changes in the supply and demand situation. However, retail prices remain constant for relatively long periods. (See Table 1.) The reasons for retail prices remaining constant for relatively long periods of time, rather than being reduced so that the seasonal increase in the volume of milk produced for use as fluid milk which takes place during the summer months in most milk market supply areas is moved into consumption as fluid milk, will now be examined. The explanation of practically constant retail prices of fluid milk is to be found mainly in the nature of consumer's response to changes in prices and, arising mainly therefrom, the sales and price policy followed by distributors.

---

[14] This is not to say that supplies do not change from day to day, since there is a trend in daily supplies that is seasonal in character. However, this trend is small when considered on a

Table 2. Number of periods during which
retail price of milk remained
unchanged for a year or more
in principal milk markets.

| Market | Period during which price remained unchanged | | | | | Percentage which the period during which price remained constant for a year or more is of total months in entire period |
	13-24 months	25-36 months	37-48 months	Over 48 months	Period years covered	
New York	1	2		1	1909-31	46.4
Boston		1			1907-31	11.3
Philadelphia	1	2		1	1907-31	67.7
Chicago	1		1	2	1907-31	71.7
Baltimore	5	1		1	1909-33	61.3
Washington	4	1			1909-31	31.2
Minneapolis	4	1			1909-30	35.2
St. Paul	2	1			1914-31	28.2
St. Louis	1	1		1	1909-31	52.2
Atlanta	5		1		1907-31	40.3
Omaha	3				1909-31	22.1
Denver	2	1		1	1909-31	41.7
Los Angeles	5		1	1	1909-31	64.9

Based on data secured from reports of the Bureau of Labor Statistics, United
States Department of Labor.

Statistical investigations have in general indicated that the demand for fluid milk by consumers is very inelastic; that is, that the change in the quantities of milk taken, following increases or decreases in price, is relatively very small. Two published studies [15] for the Chicago and New York markets indicate that, during the period covered by the studies, when consumers recognized the necessity for changes in the retail price of milk, a one cent change in the retail price of milk per quart had a very slight immediate effect on sales and this effect was considerably diminished after five or six weeks.

Evidence relative to the influence of price changes upon milk sales has been obtained from an examination of the milk sales by distributors purchasing from cooperative associations in Baltimore, Maryland, Boston, Massachusetts, and the Twin Cities, Minnesota. In these cities the cooperative associations have a considerable share of the business of the market and changes in their sales are no doubt representative of the market as a whole. These data were analyzed by comparing the sales in the calendar month preceding the price change with the sales in the calendar month following the price change, [16] after adjusting for the influence of the average seasonal variation in sales. Indexes of seasonal variation were calculated by the median-link-relative method, omitting the months in which price changes occurred. The compared months have been adjusted by dividing each by its corresponding seasonal index. The results of the analysis are given in Tables 2 to 4.

Examination of the data shows that usually a change in price results in an opposite but much smaller change in sales. In Boston, there were fifteen price changes (eight decreases and seven increases) during the period March 1922 to September 1931; in Baltimore there were only two changes, one decrease and one increase; and in the Twin Cities market there were seven decreases and three increases. Changes in sales in Boston were directly associated with changes in prices in four cases instead of being inversely associated as would be the case if other conditions remained the same. These four exceptions followed price changes occurring in July 1927, April 1928, July 1929 and August 1931; and there were four exceptions in the Twin Cities market in March 1926, November 1927, January 1931 and March 1932.

---

[15] Ross, H. A. The Marketing of Milk in the Chicago Dairy District. Ill. Agr. Exp. Sta. Bull. 269, pp. 503-510, 1925.
Ross, H. A. Some Factors Affecting the Demand for Milk and Cream in the Metropolitan Area of New York. U. S. Dept. of Agr. Tech. Bull. 73, pp. 44-47, 1928.

[16] In some cases prices changed each month for two or more consecutive months. In these cases, the sales in the calendar month preceding the price change were compared to the calendar month following the last month in the series of consecutive monthly price changes.

Table 3. Changes in sales of fluid milk
following changes in retail prices,
Baltimore, Maryland, September 1926
to May 1931, inclusive.

Month	Sales (30-day month basis) [1]	Index of seasonal varia-tion [2]	Seasonally adjusted sales [3]	Retail prices per quart [4]
	1,000 gallons	Percent	1,000 gals	Cents
September 1926	1,544	100.5	1,536	13
November 1926	1,510	101.0	1,495	14
Percent change			-2.7	+7.7
March 1931	1,431	100.2	1,428	14
May 1931	1,462	101.4	1,442	12
Percent change			+1.0	-14.3
Absolute aver- age percent change [5]			1.8	11.6

[1] Table 18 Appendix.
[2] Table 17 Appendix.
[3] Computed from Columns 1 and 2.
[4] Table 19 Appendix.
[5] Represents average of percentage changes without regard to signs.

Table 4. Changes in sales of fluid milk following changes in retail prices, Boston, Massachusetts, March 1922 to September 1931.

Month	Sales (30-day month basis) 1/	Index of seasonal variation 2/	Seasonally adjusted sales 3/	Retail prices, per quart 4/
	Mill. lbs.	Percent	Mill. lbs.	Cents
March 1922	22.0	98.6	22.3	13.5
May 1922	22.8	99.5	22.9	12.5
Percent change			+2.7	- 7.4
June 1922	23.9	102.8	23.2	12.5
August 1922	22.9	103.1	22.2	13.5
Percent change			-4.3	+ 8.0
March 1923	23.0	98.6	23.3	14.5
May 1923	23.6	99.5	23.7	13.5
Percent change			+1.7	- 6.9
June 1923	25.6	102.8	24.9	13.5
September 1923	23.2	100.5	23.1	14.5
Percent change			-7.2	+ 7.4
October 1923	23.6	100.4	23.5	14.5
May 1924	25.2	99.5	25.3	12
Percent change			+7.7	-17.2
June 1924	26.2	102.8	25.5	12
October 1924	24.1	100.4	24.0	14.5
Percent change			-5.9	+20.8
February 1925	24.6	97.6	25.2	14.5
April 1925	25.2	97.2	25.9	13.5
Percent change			+2.8	- 6.9
April 1925	25.2	97.2	25.9	13.5
June 1925	28.0	102.8	27.2	13
Percent change			+5.0	- 3.7
June 1925	28.0	102.8	27.2	13
September 1925	25.7	100.5	25.6	14.5
Percent change			-5.9	+11.5

Table 4. (Continued)

Month	Sales (30-day month basis) [1]	Index of seasonal variation [2]	Seasonally adjusted sales [3]	Retail prices, per quart [4]
	Mill. lbs.	Percent	Mill. lbs.	Cents
October 1926	28.4	100.4	28.3	14.5
February 1927	27.8	97.6	28.5	14
Percent change			+0.7	- 3.4
June 1927	29.0	102.8	28.2	14
March 1928	29.5	98.6	29.9	15.5
Percent change			+6.0	+10.7
March 1928	29.5	98.6	29.9	15.5
May 1928	29.5	99.5	29.6	14.5
Percent change			-1.0	- 6.5
June 1928	29.9	102.8	29.1	14.5
September 1928	29.4	100.5	29.3	15.5
Percent change			+0.7	+ 6.9
November 1930	29.1	100.7	28.9	15.5
March 1931	30.2	98.6	30.6	12.5
Percent change			+5.9	-19.4
July 1931	31.6	106.8	29.6	12.5
September 1931	30.1	100.5	30.0	13.5
Percent change			+1.3	+ 8.0
Average percentage change [5]			-5.8	+11.9
Average percentage change [6]			+3.8	- 9.3
Absolute average percentage change [7]			4.5	10.2

[1] Table 20 Appendix.
[2] Table 17 Appendix.
[3] Computed from [1] and [2].
[4] Table 21 Appendix.
[5] Represents average of percentage increases in price that were associated with percentage decreases in sales.
[6] Represents average of percentage decreases in price that were associated with percentage increases in sales.
[7] Represents average of percentage changes in price or in sales, without regard to signs, that were associated with opposite changes in sales or in price.

Table 5.   Changes in sales of fluid milk following changes
in retail prices, Twin Cities, Minnesota, March
1924 to August 1932.

Month and year	Sales 30-day-month basis [1]	Index of seasonal variation [2]	Seasonally adjusted sales [3]	Retail prices per quart [4]
	Thousand pounds	Percent	Thousand pounds	Cents
March, 1924	11,279	101.4	11,123	11.5
May, 1924	11,720	99.5	11,779	10
Percent change			+ 5.9	- 13.0
July, 1924	11,871	98.0	12,113	10
September, 1924	11,788	100.1	11,776	11
Percent change			- 2.8	+ 10.0
August, 1925	12,570	99.1	12,684	11
October, 1925	12,492	102.5	12,187	12
Percent change			- 3.9	+ 9.1
December, 1925	11,861	98.0	12,103	12
March, 1926	12,246	101.4	12,077	11
Percent change			- 0.2	- 8.3
August, 1927	12,111	99.1	12,221	11
November, 1927	12,608	101.7	12,397	12
Percent change			+ 1.4	+ 9.1
December, 1929	12,980	98.0	13,245	12
February, 1930	13,571	101.0	13,437	11
Percent change			+ 1.4	- 8.3
October, 1930	13,543	102.5	13,213	11
January, 1931	12,961	98.8	13,118	10
Percent change			- 0.7	- 9.1
November, 1931	12,724	101.7	12,511	10
January, 1932	12,203	98.8	12,351	9.5
Percent change			- 1.3	- 5.0
January, 1932	12,203	98.8	12,351	9.5
March, 1932	12,543	101.4	12,361	8.5
Percent change			+ 0.1	- 10.5
June, 1932	12,534	98.1	12,777	8.5
August, 1932	12,717	99.1	12,832	8
Percent change			+ 0.4	- 6.3
Average percentage change [5]			- 3.3	+ 9.6
Average percentage change [6]			+ 2.0	- 9.5
Absolute average percentage change [7]			2.4	9.5

[1] Table 22, Appendix.
[2] Table 17, Appendix.
[3] Computed from columns 1 and 2.
[4] Table 23, Appendix.
[5] Represents average of percentage increases in price that were associated with percentage decreases in sales.

These unusual cases occur in periods when business conditions were changing rapidly and appear to be adequately explained by changes in these conditions.

Data contained in the reports of the Market Administrators for the various markets operating under Federal licenses also provide some indication of the consumer response to price changes in these markets. Only those markets where Class I milk was defined as whole milk, sold or distributed for consumption as whole milk, and where the size of the sales area has remained constant are considered. These data have been received for such a short period that it was impossible to compute a satisfactory index of seasonal variation and adjust sales for seasonal variation, except where other sales data from the same market where available for earlier periods.

The results of this latter study must be interpreted with some caution since there are other factors than price which influence sales. Sudden changes in temperature influence the volume of milk sold. There is a seasonal variation in total fluid sales, which is in part influenced by the vacation movement, and this in turn is affected by the prosperity of the community. Moreover, in a period of several months in recent years business conditions and consumer incomes have changed materially. These considerations limit somewhat the significance of the results of the study. It is important to note, however, that the results supplement the results obtained in the other studies, showing that changes in price are associated with changes in fluid milk sales, and that the changes in prices are relatively much greater than the changes in sales. The data are shown in Table 5 and indicate that an average change of 3.4 percent in sales is associated with an average opposite change of 12.3 percent in price.

It appears from the foregoing that the demand for milk is highly inelastic, especially when retail price changes are relatively small. When price changes are relatively large, it is probable that the change in consumption may be somewhat greater than when the changes in the retail price are relatively small, although the change in sales is probably less than directly proportional to the change in price, although the data that are available relative to this point are inconclusive. [17] Stated differently, while the demand for milk is less inelastic when large, rather than small, price changes are considered, the coefficient of elasticity of demand still appears to be considerably less than unity.

---

[17] See also Ross, H. A., Some Factors Affecting the Demand for Milk and Cream in the Metropolitan Area of New York, Technical Bulletin No. 73, U. S. Department of Agriculture.

Table 6.   Summary of changes in sales and in prices
in specified cities.

Sales area and period	Estimated aver-age daily Class I sales	Retail delivery price, per quart
	Pounds	Cents
Boston:		
April 1934 to September 1934	1,618,000	11
October 1934 to February 1935	1,592,000	12
Percentage change	- 1.6	+ 9.1
March 1935 and April 1935	1,576,000	13
Percentage change	- 1.0	+ 8.3
Detroit:		
April 1934 to June 1934	1,221,000 1/	10
July 1934 to February 1935	1,167,000 1/	11
Percentage change	- 4.4	+10.0
March 1935	1,153,000 1/	12
Percentage change	- 1.2	+ 9.1
Evansville:		
May 1934 to September 1934	43,764	9
October 1934 to March 1935	41,635	9.5
Percentage change	- 4.9	+ 5.6
Grand Rapids:		
August 1934 and September 1934	127,123	9
October 1934 to March 1934	127,208	10
Percentage change	0.0	+11.1
Kalamazoo:		
July 1934 to November 1934	36,733	10
December 1934 to February 1935	40,720	8
Percentage change	+10.9	-20.0
March 1935	39,397	10
Percentage change	- 3.2	+25.0
Absolute average percentage change 2/	3.4	12.3

Tables 24 to 28, inclusive, Appendix.

1/ Adjusted for seasonal variation.
2/ Represents average of percentage changes without regard to signs.

On the basis of the foregoing, it appears that it would require a
very marked decrease in price in order that any appreciable seasonal
increase in the volume of milk produced for use as fluid milk be moved
into consumption as fluid milk in the market as a whole. It is rather
generally recognized that changes in the prices received by producers
that are associated with changes in retail prices are relatively greater
than the changes in retail prices. This is due to the fact that some
of the more important elements in the gross margin between the price re-
ceived by producers and the price at which the milk is sold at retail
(transportation costs, country station charges and the like) do not
change with changes in volume; in other words, they are fixed charges
per unit. This being the case, the seasonal variation in prices
received by producers would be relatively greater than the seasonal var-
iation in retail prices, which, as was pointed out before, would have to
be quite marked in order that any appreciable seasonal increase in the
production of milk produced for use as fluid milk within the supply area
be consumed as fluid milk. Over a period of time, the market seasonal
variation in prices received by producers would tend to be reduced,
since producers would change the seasonality of their production in order
to sell a larger volume of milk at the time of year when prices were
seasonally high, and would reduce their sales during the period when
prices were seasonally low. However, it would be greatly to the advan-
tage of some producers to change the seasonality of their production and
little, if any, to others, depending upon the type of farm organization
and operation followed by each. Thus, given time for economic forces to
work out their full effects, the seasonal variation in supplies and
prices received by producers, and consequently the seasonal variation in
retail prices, would be much less marked than would appear to be the
case at first.

The second limitation to lowering prices on the basis of the
seasonal increase in the volume of milk produced for use as fluid milk
by any dealer is that, in order to hold the new customers later when
supplies in the market are short, dealers would have to develop new
sources of supply during the short season in order to have sufficient
milk to meet the requirements of their larger business. These new
sources involve an expense in development (see Part II, Section G) and
may also have an equal or greater seasonal variation in production the
following year. The alternative is to raise prices when supplies are
short and thereby reduce the customer's takings or to fail to serve the
added customer. Either of these latter procedures is sure to lead to
dissatisfaction.

The foregoing facts and considerations suffice to explain in large part why retail prices of fluid milk tend to remain practically constant on a seasonal basis. Thus, instead of retail prices showing marked seasonal variation of such magnitude that the seasonal changes in volume of milk produced for use as fluid milk be moved into consumption as fluid milk, retail prices remain practically constant seasonally and seasonal changes in demand are reflected in greater or less takings of fluid milk, as the case may be, at the ruling level of prices. Such seasonal variations in demand are generally quite small, and are much less than the seasonal variation in the volume of milk produced for use as fluid milk that obtains in most milk market supply areas. (See Table 17, Appendix.) 18/ Thus, unless the volume of milk produced for use as fluid milk is equal to fluid milk requirements on a seasonal basis, the seasonal increase in the volume of milk produced for use as fluid milk is diverted to uses other than fluid milk. Stated differently, the seasonal increase in the volume of milk produced for use as fluid milk becomes a seasonal excess over fluid milk requirements. In the next part of the analysis of the price structure for milk within a milk shed, an explanation of the development of class prices, or the classified price plan of payment for milk by distributors, will be set forth.

18/   See also Ross, H. A., The Marketing of Milk in the Chicago Dairy
        District, Ill. Agr. Exp. Sta. Bull. No. 269, and Ross, H. A.,
        Some Factors Affecting the Demand for Milk and Cream in the
        Metropolitan Area of New York, U. S. Dept. of Agr. Tech. Bull.
        No. 73.

Part IV

The Price Structure for Milk within a Milk Shed -
The Development of Class Prices.

The analysis of the price structure for milk within a milk shed will now be focussed upon the manner in which class prices or, stated more precisely, the classified price plan of selling milk to distributors, develops in a milk market. At this point it is important to set forth as clearly as is possible in a short paper the difference between the classified price plan and the rating plan.[19] The classified price plan is a method of selling milk to distributors, while the rating plan is a method of prorating to producers the proceeds of sales to distributors. The classified price plan does not necessarily need to be complemented by the operation of a rating plan, and classified price plans are often used where no rating plan is in operation. On the other hand, the rating plan under certain forms of administration becomes in effect a classified price plan and a plan for prorating to producers the proceeds of sales to distributors. For example, in some markets, producers associations bargain for "base" and "surplus" prices; "bases" are established for individual producers for which "base" milk producers receive "basic" prices. Producers are shifted among distributors in such fashion that the total bases of producers delivering milk to any particular distributor are approximately equal to such distributor's sales of fluid milk. However, pricing milk to distributors in accordance with a classified price plan is usually more precise than that just noted, with a more strict accounting and pricing of milk according to use, and is not necessarily operated in conjunction with a base-rating plan.

For the purposes of this paper, the classified price plan is defined as a method of selling and pricing milk to distributors in accordance with the use made thereof, while the base-rating plan is defined as a method of prorating to producers the proceeds of sales to distributors.

It has already been demonstrated (see Part II) that, assuming little seasonal variation in the demand for milk, certain supply characteristics operate so that, given differences in individual producers' seasonal output curves, and providing that economic forces have time to work out their full effects, producers who produce a relatively constant volume of milk throughout the year will receive higher prices, other factors accounted for, than producers who produce a relatively more variable volume of milk throughout the year. Furthermore, the producers who produce a relatively constant volume of milk throughout the year will tend to become associated with highly specialized fluid milk distributors (highly specialized in the sense that the operating unit is engaged almost entirely in the distribution of fluid milk, while those who produce a relatively more variable quantity throughout the year will tend to

---

[19] Often called base-surplus, base-rating, and the like.

become associated with distributors who are less highly specialized (in the sense noted above). The assumption that there is little seasonal variation in the demand for milk was then examined, (Part III) and it was found that certain factors operate so that there is marked seasonal uniformity in retail fluid milk prices, and seasonal changes in demand, which are very small in most cases, are reflected in slight seasonal changes in the quantities of fluid milk consumed at practically constant prices, rather than seasonal changes in the quantities of milk consumed that are associated with seasonal changes in retail fluid milk prices. It is in the analysis of the seasonal behavior of retail fluid milk prices, and the effects such behavior would tend to have upon the prices received by producers, that the reasons for the development of the seasonal excess were ascertained.

Once the development of the seasonal excess has been demonstrated, the basis for the effort on the part of specialized fluid milk distributors to secure a uniform volume of milk throughout the year becomes apparent. Under these circumstances, the argument that specialized fluid milk distributors tend to secure milk to meet the needs of their fluid milk trade, which are practically constant seasonally, from producers who produce a relatively uniform volume of milk throughout the year, such producers receiving higher prices, other factors accounted for, than producers who produce a relatively more variable volume of milk throughout the year and, consequently, tend to become associated with less highly specialized distributors, applies with especial force.

It should be noted that it is not contended that distributors select producers who produce a relatively uniform volume of milk throughout the year at random throughout the milk shed. It is rather well recognized that, generally speaking, producers within a particular type of farming area have markedly similar seasonal output curves. Thus, a distributor who wishes to secure a uniform supply of milk throughout the year can usually operate in an area or areas where a fairly large supply of such milk is available.

The situation treated above with respect to the procurement of milk by distributors is strikingly similar to the situation that obtains when distributors purchase their milk in accordance with the provisions of a formal classified price plan. In the former situation, there is a close approximation to the purchase of milk on a classified price basis, considering the market as a whole, due to the fact that those distribution units which are highly specialized, i.e., which distribute by far the larger portion of the milk they secure as fluid milk, tend to pay higher prices for milk than distribution units which are less highly specialized, i.e., which utilize relatively more of the milk they secure as manufacturing milk. The difference between this method of purchasing milk and a formal classified price method of purchasing is merely one of the degree and precision with which milk is classified in accordance with the use made thereof.

Producers' cooperative associations have recognized the principles noted above in bargaining with distributors and have developed the system of formal class prices whereby milk is priced by cooperatives to distributors in accordance with the form in which milk is sold by distributors. Thus, a formal system of class prices, intended to secure the same result, is substituted for the rather informal system of class prices discussed above. The distributor with the larger use of milk in fluid sales pays a higher average price than the one with a considerable utilization in manufactured products. The system of formal class prices has the advantage for the producers' cooperative association of simplifying the bargaining arrangements, since it automatically establishes the basis of payment for the different dealers once the general terms for the market are determined. Without class prices, individual bargains would be necessary with each dealer in order to insure producers the full value of their particular milk, and the association would be exposed to the criticism of over- or under-pricing the milk of particular producers and over- or undercharging particular distributors. Class prices dispose of this necessity for individual bargains and result in payments corresponding to the prices which would have been arrived at under proper individual bargaining.

In addition to the seasonal factors treated above which lead to the development of a classified price plan of selling milk to distributors, there are certain types of organization of supply that would lead to the development of a formal class price system, even though the volume of milk produced throughout the year and the volume of milk consumed in the market throughout the year were precisely correlated, except for daily variations in demand and supply. In such cases, the reason for the development of a classified price plan is to be found in the fact that there must be brought to market a volume of milk in excess of daily average sales, such excess volume being needed to meet daily variations in sales.

It is rather well recognized that there are significant variations in the amount of milk sold from day to day in a fluid milk market, such variations being attributable to such factors as (1) consumption and working habits of the people which tend to show a regular day of the week variation, (2) holidays, and (3) changes in temperature.

Consumption and working habits of the people are such as to cause a rather regular day of the week variation in the sales of various products. Most business concerns, for example, do not operate on Sunday and many also close operations on Saturday afternoons. The Sunday dinner is frequently a heavier and more elaborate meal than that served on week days. These factors affect wholesale and retail sales of the various products differently. Wholesale sales of milk and cream are ordinarily low on Sunday, with sales to restaurants and cafeterias also low on Saturday. Sales of cream to stores are usually large on Saturday, Friday and Monday. Route sales of milk and cream are heavier on Sunday.

Examples of the variation in the average sales on various days of the week for several markets are given in tables 6 to 10, inclusive. In general, the greatest variation is found in cream sales, the range for the New York market for all cream being from 84.7 percent of the average daily sales for the week on Sunday to 127.9 percent on Saturday. For all milk in the same market the range was from 90.2 percent of the average daily sales for the week on Sunday to 102.8 percent on Friday. [20] Examination of the tables indicates a greater variation in wholesale sales of fluid milk than of the retail sales, but in the case of cream the reverse may be the case. These variations differ in the various sections of a large city depending largely upon the economic status of the consumers and the number of persons who lunch away from home during the day. [21] Since dealers have varying proportions of retail and wholesale business and serve different sections of the population, they are unlikely to have variations in sales corresponding to those in the market as a whole. Some dealers will have larger variations in sales and others smaller variations. The difference in the character of the business of dealers and the consequent differences of sales by day of the week, even for the same type of products, are shown in tables 11 to 14, inclusive. These tables show the variation in the sales of Milwaukee, Wisconsin, dealers during the week of April 22 to 28, 1934. The daily sales of each dealer have been shown as a percentage of his own average daily sales for the week. This variation in sales among dealers means that the excess milk above the average daily sales of the market is higher than would be the case if dealers had available some method of integrating their individual fluctuations in sales with other dealers having different fluctuations, through a shifting of milk between them.

---

[20] Ross, H. A., Some Factors Affecting the Demand for Milk and Cream in the Metropolitan Area of New York, United States Department of Agriculture - Technical Bulletin 73, 1928.

[21] Ibid, p. 32.

Table 7. Daily fluctuation in sales of milk and cream
in the New York Metropolitan Area, 1924.

Type of sale	Percentage of average daily sales for the week						
	Sunday: Percent	Monday: Percent	Tuesday: Percent	Wednesday: Percent	Thursday: Percent	Friday: Percent	Saturday: Percent
Retail sales of milk							
Qts., Grade B	103.7	99.5	99.6	99.8	99.2	99.3	98.9
Qts., Grade A	100.5	100.0	100.2	100.3	99.8	99.8	99.4
Qts., Certified	98.9	100.9	99.8	100.6	100.6	100.3	98.9
Qts., Buttermilk	76.4	106.9	106.5	106.3	102.9	106.5	94.5
Pts., Grade B	77.6	106.3	106.9	108.0	108.0	107.2	85.5
1/2 Pts., Condensed	106.0	96.9	99.0	105.8	93.8	94.7	103.8
Retail sales of cream							
1/2 Pts., Light	108.0	98.0	99.7	103.5	97.8	96.6	96.4
1/2 Pts. ExtraHeavy	176.3	83.4	88.8	92.3	86.2	82.1	90.9
Wholesale sales of milk							
Qts., Grade B	92.8	99.4	100.8	99.6	100.8	102.2	104.4
Pts., Grade B	46.8	115.2	116.8	115.7	118.4	115.9	71.2
Bulk, Grade B	73.5	107.3	103.1	104.2	104.3	107.2	100.4
Condensed Milk	42.7	114.5	86.9	93.4	83.6	130.6	148.3
Buttermilk	34.4	126.5	106.0	109.2	114.4	115.0	94.5
Wholesale sales of cream							
Light	42.3	118.9	95.6	93.7	94.9	121.8	132.8
Extra Heavy	72.9	107.7	88.9	91.4	86.6	112.2	140.3

Compiled from "Some Factors Affecting the Demand for Milk and Cream in the
Metropolitan Area of New York," by H. A. Ross, United States
Department of Agriculture, Technical Bulletin No. 73, June 1928.

Table 8.   Daily fluctuation in retail, wholesale and
total sales of fluid milk and cream in
Reading, Pennsylvania.

Type of sale	Percentage of average daily sales for the week						
	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
	Percent	Percent	Percent	Percent	Percent	Percent	Percent
Milk:							
Retail	107.49	95.18	98.62	98.54	99.01	99.18	101.97
Wholesale	61.36	106.27	102.46	102.86	104.50	115.20	107.35
Total	91.90	98.93	99.92	100.00	100.86	104.60	103.79
Cream:							
Retail	136.07	87.18	99.62	96.63	87.51	85.99	107.01
Wholesale	77.21	102.33	96.32	111.62	105.01	95.83	111.67
Total	112.91	93.14	98.32	102.53	94.40	89.87	108.84

Compiled from "Distribution and Consumption of Milk in Reading, Pennsylvania,"
by T. K. Cowden, Pennsylvania Agricultural Experimental
Station, Technical Bulletin 614, November 8, 1933.

Table 9. Daily fluctuation 1/ in sales of certain dairy products in Chicago and suburbs.

Type of sale	Sunday :Percent	Monday: Percent	Tuesday: Percent	Wednesday: Percent	Thursday: Percent	Friday :Percent	Saturday : Percent
Milk, Quarts	104.7	97.2	99.9	99.3	100.4	100.4	100.0
Milk, Pints	64.3	100.8	104.2	104.9	104.4	105.2	81.3
22% Cream, 1/2 Pints	153.7	93.7	100.7	99.3	103.1	97.6	99.3
32% Cream, 1/2 Pints	311.9	76.4	88.1	96.3	107.3	93.0	115.3

Compiled from "The Marketing of Milk in the Chicago Dairy District," Illinois Agricultural Experiment Station Bulletin No. 269.

1/ Based on average retail sales to more than 200,000 families during the three-year period 1920-1922. Average sales for the five days Tuesday, Wednesday, Thursday, Friday and Saturday = 100 percent.

Table 10. Daily fluctuation in sales and receipts of milk and cream for the Pittsburgh market, during the last two weeks of July, 1933. 1/

Type of sale	Percentage of average daily sales for the week						
	Sunday: Percent	Monday: Percent	Tuesday: Percent	Wednesday: Percent	Thursday: Percent	Friday: Percent	Saturday: Percent
Regular fluid milk	76.25	105.16	102.56	100.69	102.01	109.44	103.90
Special fluid milk	95.09	97.74	103.66	97.06	105.17	96.31	104.96
Total fluid milk	76.67	104.99	102.58	100.61	102.08	109.15	103.92
Fluid Cream	92.36	92.41	100.60	93.22	105.57	99.82	116.02
Dealer purchases of milk and cream	98.35	97.25	100.21	102.83	101.31	98.55	101.48

Compiled from "The Distribution and Consumption of Milk in Allegheny County, Pennsylvania," by T. K. Cowden, and C. G. Gifford, Pennsylvania Agricultural Experiment Station Technical Paper 641, March 13, 1934.

1/ Based on reports received from 35 dealers handling 77 percent of the fluid milk sales in the market.

Table 11. Daily fluctuation in the sales of milk and cream in Williamsport, Pennsylvania, March, April and May 1933.

Type of sale	Percentage of average daily sales for the week						
	Sunday: Percent	Monday: Percent	Tuesday: Percent	Wednesday: Percent	Thursday: Percent	Friday: Percent	Saturday: Percent
Milk							
Retail	102.35	97.81	99.99	100.04	99.71	99.69	100.40
Wholesale	65.86	104.23	102.25	105.63	105.70	111.06	105.25
Total	94.94	99.17	100.80	101.15	100.76	102.97	101.09
Cream							
Retail	138.75	87.51	97.81	86.18	90.10	88.15	101.52
Wholesale	88.92	95.85	93.73	102.59	93.77	105.04	118.20
Total	111.75	93.14	95.16	98.23	92.46	99.07	110.19

Holidays also exert a considerable influence upon milk and cream sales, since these are occasions for special activities. On certain of these days, notably during the summer, there is a considerable movement of people out of the city, while other holidays are feast days. In general, milk consumption appears to be somewhat decreased on holidays except for increases at Thanksgiving and Christmas. Sales of extra heavy cream at Christmas and Thanksgiving increase by over eighty percent. Data for the New York market are given in Table 15.

Temperature is also an important factor in short-time variations in the demand for milk. In general, an increase in temperature is associated with an increase in demand, and a decrease in temperature is associated with a decrease in demand. In the New York market it was found that temperature changes in winter are more marked than in summer but that a change of a given number of degrees produced about three times as great a change in summer as a similar change in the winter. [22]

On the basis of the foregoing, it appears that a considerable volume of milk in excess of average daily sales must be brought to market in order to have a supply sufficient to cover daily variations in the demand for milk. Few data are available relative to the necessary size of this daily excess, hereinafter termed the operating reserve, but it appears to range from ten to twenty percent of average daily sales at least, and perhaps higher in some markets.

If the producers in the market so organize their service of supply to the distributors so as to remove from them entirely or even partly the necessity of carrying this "operating reserve", producers can secure a higher price for the delivered milk since the distributor has always available all the milk he needs for his fluid milk trade and is also relieved of the necessity of procuring his milk from a large number of individual producers and is under no necessity of taking milk, a portion of which must be disposed of in channels other than fluid milk. This is one of the services which operating producers' cooperative associations commonly provide distributors purchasing from them. They are thus able to sell distributors milk at a higher price than they are able to secure when distributors are not so serviced. There would thus arise what amounts to a class price for milk, distributors paying a certain price for the milk called for from the association and used for fluid purposes, with the association utilizing the remaining milk in the most profitable possible manner but in uses yielding somewhat lower returns than the fluid sales. The difference between the prices charged distributors for

[22] Ross, H. A., Some Factors Affecting the Demand for Milk and Cream in the Metropolitan Area of New York, United States Department of Agriculture Technical Bulletin No. 73, pp. 39-44.

Table 12. Daily fluctuation in wholesale sale of
pints of regular milk, Milwaukee, April
22-28, 1934.

Company		Percentage of average daily sales for the week					
	Sunday	Monday	Tuesday	Wed.	Thurs.	Friday	Saturday
	Percent	Percent	Percent	Percent	Percent	Percent	Percent
H	103.0	113.2	123.5	72.1	154.4	72.1	154.4
I	110.3	133.6	135.2	139.4	140.4	131.7	8.7
M	7.8	134.4	127.7	128.2	131.0	137.3	33.6
R	73.3	115.1	95.5	102.1	109.9	124.3	79.8
S	25.9	129.6	51.9	25.9	181.5	155.6	129.6
D	2.1	65.6	139.1	152.0	128.5	128.5	34.2
K	59.1	106.8	88.6	70.5	213.6	75.0	86.4
O	35.7	123.5	109.8	120.8	109.8	118.0	82.4
T							
U	0.0	116.6	116.7	116.7	116.7	116.7	116.7
A	215.5	90.0	81.5	78.6	82.8	79.9	71.7
C	67.7	12..2	101.6	146.6	90.3	112.9	56.5
V	65.8	108.5	105.1	112.9	116.9	98.7	98.1
B	15.6	132.4	131.7	135.8	123.8	121.8	39.9
E	0.0	197.1	155.3	149.5	155.3	13.6	27.2
F	0.0	0.0	0.0	700.0	0.0	0.0	0.0
L	61.8	102.9	128.7	113.2	139.0	72.0	82.4
P							
Q							
Y	100.0	0.0	0.0	200.0	0.0	200.0	200.0
Weighted average for all dealers:	69.6	119.1	115.6	116.5	117.6	112.6	49.0

Compiled from unpublished data secured during the Milwaukee Milk
Survey conducted by the Federal Emergency Relief Administration,
and Wisconsin Emergency Relief Administration under the direction
of the Agricultural Adjustment Administration.

Table 13.   Daily fluctuation in retail sales of
quarts of regular milk, Milwaukee,
April 22-28, 1934

Company	Percentage of average daily sales for the week						
	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
	Percent	Percent	Percent	Percent	Percent	Percent	Percent
H	91.9	96.2	103.0	98.6	103.6	102.9	103.8
I	99.6	97.6	100.2	100.2	100.7	100.8	100.9
M	100.2	96.2	99.0	100.1	100.9	99.7	103.9
R	102.2	96.5	101.7	98.8	100.8	98.0	102.0
S	99.3	97.4	102.2	98.3	99.7	98.7	104.4
D	96.4	101.1	95.8	102.8	102.7	97.8	103.4
J	100.1	103.3	98.9	98.5	92.7	99.2	107.3
K	99.3	97.4	100.8	100.0	100.2	100.3	102.0
U	98.7	99.6	100.5	99.9	99.1	100.2	102.0
A	100.7	97.3	98.1	100.0	101.1	99.2	103.6
C	97.3	103.4	99.7	95.4	104.1	98.9	101.2
V	99.4	96.9	101.8	101.3	102.8	99.2	98.6
B	99.8	98.1	97.8	101.0	101.9	97.6	103.8
E	96.2	100.7	95.1	103.6	102.7	96.3	105.3
F	95.3	102.4	95.5	102.9	101.4	98.6	103.9
G	95.1	99.0	100.4	99.2	101.2	100.1	105.0
L	97.9	96.3	99.4	103.5	105.7	98.8	100.4
P	99.0	98.5	99.3	100.5	100.1	101.0	101.6
Q	96.9	98.9	99.3	96.3	103.9	99.9	102.6
Y	99.0	100.8	97.4	99.8	100.0	100.8	102.2
Weighted average for all dealers	99.7	97.9	98.4	100.4	101.3	99.0	103.3

Compiled from unpublished data secured during the Milwaukee Milk Survey
conducted by the Federal Emergency Relief Administration and the Wiscon-
sin Emergency Relief Administration under the direction of the Agricultural
Adjustment Administration.

Table 14. Daily fluctuation in wholesale sales of
quarts of 18% cream, Milwaukee, April 22-
28, 1934

Company	Percentage of average daily sales for the week						
	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
	Percent	Percent	Percent	Percent	Percent	Percent	Percent
H	35.9	89.7	80.7	107.7	116.7	98.7	170.6
I	78.4	106.4	95.2	89.6	95.2	117.6	117.6
M	80.6	115.1	96.7	71.4	87.5	78.3	170.4
R	100.0	76.5	100.0	70.6	129.4	94.1	129.4
S	116.7	58.3	116.7	58.2	116.7	116.7	116.7
D	0.0	0.0	0.0	0.0	700.0	0.0	0.0
J	33.3	166.7	66.7	100.0	100.0	200.0	33.3
K	83.1	99.0	87.9	95.8	97.4	111.7	125.1
O	9.5	131.8	113.0	116.1	103.6	119.3	106.7
T							
U	53.8	107.7	107.7	107.7	107.7	107.7	107.7
A	97.6	91.0	101.6	88.3	101.6	90.7	129.2
C	65.1	114.0	146.4	97.7	97.7	65.1	114.0
V	75.4	86.2	53.8	96.9	96.9	118.5	172.3
B	72.6	103.6	94.7	108.9	95.8	101.8	122.6
E	89.1	50.9	127.3	101.8	101.8	76.4	152.7
F	116.7	58.3	116.7	116.7	0.0	58.3	233.3
G	94.2	67.4	114.4	107.7	107.7	94.2	114.4
L	311.1	0.0	77.8	0.0	77.8	155.5	77.8
P	41.2	41.2	41.2	123.5	41.2	82.4	329.3
Q	0.0	0.0	0.0	0.0	0.0	700.0	0.0
Y	140.0	93.3	93.3	93.3	186.8	0.0	93.3
Weighted Average all dealers	77.0	99.9	95.9	97.7	98.8	101.5	129.2

Compiled from unpublished data secured during the Milwaukee Milk
Survey conducted by the Federal Emergency Relief Administration
and the Wisconsin Emergency Relief Administration under the di-
rection of the Agricultural Adjustment Administration.

Table 15.   Daily fluctuation in retail sales of
half pints of 18% cream, Milwaukee,
April 22-28, 1934

Company	Percentage of average daily sales for the week						
	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
	Percent	Percent	Percent	Percent	Percent	Percent	Percent
H	119.5	85.4	97.4	119.5	78.5	100.7	99.0
M	152.0	74.7	92.8	93.1	90.7	89.6	107.1
R	206.1	76.4	84.0	81.5	89.1	76.4	86.5
S	301.3	35.4	53.2	57.6	79.7	66.5	106.3
D 1/	211.7	78.4	96.3	0.0	88.0	101.8	123.8
K 2/	165.6	82.8	90.3	94.1	86.6	82.8	97.8
E	164.0	84.0	89.3	97.3	73.4	84.0	108.0
G	95.5	190.8	0.0	79.5	143.2	95.5	95.5
Weighted average all dealers	159.9	76.5	91.3	88.0	88.6	89.3	106.4

Compiled from unpublished data secured during the Milwaukee Milk
Survey conducted by the Federal Emergency Relief Administration
and the Wisconsin Emergency Relief Administration under the
direction of the Agricultural Adjustment Administration.

1/   19%

2/ $18\frac{1}{2}$%

Table 16. Effect of holidays on sales of retail milk and cream in the New York Metropolitan Area - 1924.

Product	New Year's Day Per cent	Lincoln's Birthday Per cent	Washington's Birthday Per cent	Easter Per cent	Passover week Per cent	Memorial Day Per cent	Fourth of July Per cent	Labor Day Per cent	Yom Kippur Per cent	Thanksgiving Per cent	Christmas Per cent
Quarts - Grade B	- 1.4	+ 1.2	.6	0	- 1.5	- 1.2	- 2.4	- 6.0	0	+ .6	+ 3.0
Quarts - Grade A	0	- 1.2	- .6	- .6	- 1.4	- 1.2	- 2.4	- 4.8	0	+ .6	+ 1.2
Quarts -Certified	- 3.0	- 1.8	- 2.9	.0	- 1.8	- 1.2	- 1.8	- 6.5	- .6	- 1.2	-1.8
Pints - Grade B	-24.0	-10.4	-20.7	+1.6	2.6	-26.5	-28.3	-29.8	-5.5	-25.1	-26.1
Extra heavy cream	+44.0	+ 2.1	+11.1	+2.8	.6	+23.3	+27.8	- 7.8	-1.9	+83.4	+83.7

Compiled from "Some Factors Affecting the Demand for Milk and Cream in the Metropolitan Area of New York," United States Department of Agriculture, Technical Bulletin No. 73 - June, 1928.

1/ Percentage change from the average corrected sales for the three days preceding and the three days following the holiday.

milk that is sold by them as fluid milk and the price the association receives for milk in other uses is, other factors being the same, the premium distributors are willing to pay for milk when such milk is furnished them in conformance with their daily needs.

Although there may be other factors that, in a particular market, also contribute to the development of a system of class prices, the foregoing treatment suffices to explain the more important considerations obtaining that, taken as a whole, lead to the development of class prices in most important milk markets.

Literature Cited

Lininger, F. F., Pennsylvania State College, Agri. Exp. Station Bulletin
No. 231.

Ross, H. A.,   Cornell University, Agri. Exp. Station Bulletin No. 527.

Ross, H. A.,   The Marketing of Milk in the Chicago Dairy District,
Illinois Agri. Exp. Station Bulletin No. 269.

Ross, H. A.,   Some Factors Affecting the Demand for Milk and Cream in
the Metropolitan Area of New York, U. S. Dept. of Agri.
Technical Bulletin No. 73.

A P P E N D I X

Table 17. Index numbers of seasonal variation in fluid
milk sales by distributors purchasing from
cooperative associations.

	Baltimore	Boston	Twin Cities
	Percent	Percent	Percent
January	97.7	96.9	98.8
February	96.6	97.6	101.0
March	100.2	98.6	101.4
April	100.4	97.2	101.8
May	103.1	99.5	99.5
June	101.4	102.8	98.1
July	99.0	106.8	98.0
August	96.4	103.1	99.1
September	100.5	100.5	100.1
October	103.0	100.4	102.5
November	101.0	100.7	101.7
December	98.7	95.9	98.0
Average	100.0	100.0	100.0

Index numbers were calculated by the median-link-relative method from
data of fluid milk sales, omitting those months in which price changes
occurred. For basic data used in computing the index for Baltimore
see tables 17 and 18; for Boston, see tables 19 and 20; and for Twin
Cities, see tables 21 and 22.

Table 18. Fluid milk sales 1/ of Maryland State Dairymen's Association, December 1923-December 1931.

Year	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
	000	000	000	000	000	000	000	000	000	000	000	000	000
	gallons	gallons	gallons	gallons	gallons	gallons	gallons	gallons	gallons	gallons	gallons	gallons	gallons
1923													
1924	1,171	1,207	1,230	1,237	1,262	1,254	1,262	1,287	1,313	1,367	1,368	1,348	1,275
1925	1,347	1,338	1,428	1,445	1,489	1,552	1,491	1,439	1,525	1,578	1,508	1,490	1,468
1926	1,476	1,489	1,517	1,530	1,592	1,570	1,539	1,490	1,544	1,582	1,510	1,481	1,525
1927	1,480	1,512	1,549	1,536	1,562	1,558	1,538	1,485	1,554	1,598	1,562	1,558	1,541
1928	1,527	1,549	1,571	1,549	1,596	1,562	1,517	1,481	1,506	1,575	1,555	1,514	1,542
1929	1,517	1,526	1,547	1,551	1,673	1,566	1,528	1,495	1,571	1,575	1,555	1,510	1,551
1930	1,497	1,507	1,543	1,534	1,592	1,561	1,517	1,493	1,587	1,469	1,509	1,465	1,523
1931	1,434	1,450	1,431	1,470	1,491	1,462	1,435	1,407	1,468	1,457	1,414	1,376	1,441

Compiled from "History of Maryland State Dairymen's Association," Appendix Table VI.

1/ Adjusted to 30 day month.

Table 19. Retail prices of milk per quart delivered in Baltimore, 1924-1931

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
	Cents	Cents	Cents	Cents	Cents	Cents	Cents	Cents	Cents	Cents	Cents	Cents	Cents
1924	13	13	13	13	13	13	13	13	13	13	13	13	13
1925	13	13	13	13	13	13	13	13	13	13	13	13	13
1926	13	13	13	13	13	13	13	13	14	14	14	14	13
1927	14	14	14	14	14	14	14	14	14	14	14	14	14
1928	14	14	14	14	14	14	14	14	14	14	14	14	14
1929	14	14	14	14	14	14	14	14	14	14	14	14	14
1930	14	14	14	14	14	14	14	14	14	14	14	14	14
1931	14	14	14	13	12	12	12	12	12	12	12	12	12

Compiled from reports of the United States Department of Labor, Bureau of Labor Statistics.

Table 20. Monthly fluid milk sales1/ by large dealers in Boston, 1922-1931.

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
	Mil. pounds	Mil. pounds	Mil. pounds	Mil. pounds	Mil. pounds	Mil. pounds	Mil. pounds	Mil. pounds	Mil. pounds	Mil. pounds	Mil. pounds	Mil. pounds	Mil. pounds
1922	21.4	21.7	22.0	21.5	22.9	22.9	23.4	22.9	22.6	22.5	22.7	21.3	22.4
1923	22.0	22.4	23.0	22.6	23.6	25.6	24.5	23.7	23.2	23.6	23.5	22.6	23.4
1924	22.9	23.1	24.1	24.5	23.2	26.2	27.2	26.1	24.6	24.1	24.4	23.8	24.7
1925	24.2	24.6	25.2	25.2	25.5	28.0	27.2	26.3	25.7	25.8	26.1	25.4	25.8
1926	25.9	26.1	26.5	26.5	27.0	27.6	28.9	27.5	27.2	28.4	28.4	26.6	27.2
1927	27.2	27.3	28.6	28.4	27.9	29.0	29.8	28.2	28.2	28.7	28.1	27.8	28.3
1928	28.7	29.0	29.5	23.9	29.5	29.9	31.3	31.4	29.4	30.6	31.1	29.8	29.9
1929	30.5	30.8	31.5	31.0	32.0	32.8	32.8	31.7	31.0	30.4	30.7	29.1	31.2
1930	29.6	30.0	30.4	30.2	31.2	31.4	30.5	29.7	30.6	29.7	29.1	28.2	30.1
1931	30.0	29.6	30.2	29.9	31.8	30.2	31.6	30.6	30.1	30.3	29.7	28.5	30.2

1/ Adjusted to thirty-day month.

Data supplied by W. H. Bronson of the New England Milk Producers' Association.

Table 21. Retail prices of milk per quart delivered in
Boston, 1922-1931.

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
	Cents	Cents	Cents	Cents	Cents	Cents	Cents	Cents	Cents	Cents	Cents	Cents
1922	13.5	13.5	13.5	12.5	12.5	12.5	13.5	13.5	13.5	13.5	14.5	14.5
1923	14.5	14.5	13.5	13.5	13.5	14.0	14.5	14.5	14.5	15.5	15.5	15.0
1924	14.5	13.5	12.5	12.0	12.0	12.5-	13.5	14.5	14.5	14.5	14.5	14.5
1925	14.5	14.5	13.5	13.0	14.0	13.0	14.0	14.5	14.5	14.5	14.5	14.5
1926	14.5	14.5	14.5	14.5	13.5	14.5	14.5	14.5	14.5-	14.5	14.5-	14.0-
1927	14.0	14.0	14.0	14.0	14.0-	15.0	15.0-	15.5-	15.0-.15.5.	15.5-	15.0	15.0
1928	16.0	15.5	15.5	15.0	14.5-	14.5-	15.5	15.5	15.5	16.5	16.5	16.5
1929	15.5	15.5	15.5	15.5	15.5	15.5	15.5	15.5	15.5	15.5	15.5	15.5
1930	15.5	15.5	15.5	14.5-	14.5-	14.5-	15.5	15.5	15.5	15.5	15.5	13.5-
1931	13.5	13.5	13.5	12.5	12.5	12.5	13.5	13.5	13.5	13.5	10.0-	12.5

Data supplied by W. H. Bronson of the New England Milk Producers' Association.

Note: During the period April 1, 1923 to September 4, 1927 some dealer's
prices were 1/2 cent higher than the prices indicated above.

Table 22. Fluid milk sales 1/ to distributors by Twin City
Milk Producers' Association, 1924-1932.

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
	000	000	000	000	000	000	000	000	000	000	000	000
	pounds	pounds	pounds	pounds	pounds	pounds	pounds	pounds	pounds	pounds	pounds	pounds
1924	11,098	11,541	11,279	11,876	11,720	11,814	11,871	11,799	11,788	12,318	12,225	11,843
1925	11,958	12,265	12,572	12,710	11,720	12,572	12,210	12,570	13,052	12,492	12,421	11,861
1926	12,079	12,178	12,246	12,331	12,522	12,170	12,004	11,990	11,988	12,368	12,293	12,002
1927	12,246	12,485	13,775	12,474	12,005	11,912	11,769	12,111	12,737	12,438	12,608	12,100
1928	12,480	12,634	12,782	12,729	12,515	12,238	12,270	12,436	12,439	13,607	13,406	12,644
1929	12,785	12,942	12,968	13,086	12,820	12,437	12,432	12,684	13,053	13,495	13,433	12,980
1930	13,256	13,571	13,648	13,646	13,119	13,004	13,142	13,097	13,346	13,543	13,487	12,860
1931	12,961	13,277	13,201	13,258	13,821	12,842	12,993	12,162	12,568	12,808	12,724	12,065
1932	12,203	12,543	12,724	12,724	12,288	12,534	12,571	12,717	12,771	12,612	12,093	11,862

Computed from data in National Cooperative Milk Producers' Federation, History Series
No. 7. "Twin City Milk Producers' Association." Appendix Table IV.

1/ Adjusted to 30-day month.

Table 23. Retail prices of milk per quart
in Twin Cities, 1924-1932.

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
	Cents	Cents	Cents	Cents	Cents	Cents	Cents	Cents	Cents	Cents	Cents	Cents
1924	11-12	11-12	11-12	10	10	10	10	11	11	11	11	11
1925	11	11	11	11	11	11	11	12	12	12	12	12
1926	11-12	11	11	11	11	11	11	11	11	11	11	11:10-11¹/
1927	10-11¹/	11	11	11	11	11	11	11:11-12	12	12	12	12
1928	12	12	12	12	12	12	12	12	12	12	12	12
1929	12	12	12	12	12	12	12	12	12	12	12	12
1930	11	11	11	11	11	11	11	11	11	11:10-11	11:10-11	10
1931	10	10	10	10	10	10	10	10	10	10	10	9-10
1932	9-10	8-10	8-9	8-9	8-9	8-9	8	8	8	8	8	8

Data supplied by Twin City Milk Producers' Association.

1/ In the discussion in the text of this paper the reported change in
price during December 1926 and January 1927 was not considered. The
Bureau of Labor Statistics reported no change in the price for those
months for St. Paul and no change occurred in prices paid to producers.

Table 24. Sales and retail prices of fluid milk in the
Boston Sales Area.

Year and month	Class I sales of milk	Milk reported as percent of estimated total sales	Estimated total Class I sales	Estimated average daily Class I sales	Retail delivered price per quart	Retail store price per quart	Class I price per cwt. of 3.7% milk f.o.b. City
	000 lbs.	Percent	000 lbs.	000 lbs.	Cents	Cents	Dollars
1934							
April	41,349	89.5	46,190	1,540	11	10	2.95
May	44,599	89.0	50,111	1,616	11	10	2.95
June	43,632	89.5	48,751	1,625	11	10	2.95
July	48,117	89.5	53,762	1,734	11	10	2.95
August	44,735	90.0	49,706	1,603	11	10	2.95
September	42,847	90.0	47,608	1,587	11	10	2.95
October	44,729	90.0	49,699	1,603	12	11	3.26
November	43,482	88.5	49,132	1,638	12	11	3.26
December	42,698	88.0	48,520	1,565	12	11	3.26
1935							
January	43,207	88.0	49,099	1,584	12	11	3.26
February	38,231	87.0	43,944	1,569	12	11	3.30
March	42,573	86.0	49,503	1,597	13	12	3.49
April	40,122	86.0	46,653	1,555	13	12	3.49
April to September				1,618	11		
October to February				1,592	12		
% change				-1.6	+9.1		
March and April				1,576	13		
% change				-1.0	+8.3		

Sales and Class I price compiled from reports of Market Administrator.
Retail prices compiled from reports of U. S. Department of Agriculture Market News
    Service.

Table 25. Sales and retail prices of fluid
milk in the Detroit Sales Area.

Year and month	Class I sales of milk : 000 lbs.	Milk reported as percent of esti-mated total sales : Percent	Estimated total Class I sales : 000 lbs.	Estimated average daily Class I sales : 000 lbs.	Daily sales adjusted for sea-sonal Va-riation[1] : 000 lbs.	Retail delivered price per quart : Cents	Retail store price per quart : Cents	Class price per cwt of 3.5 milk f.o.b. C : Dollar
1934								
April	35,448	90	39,387	1,313	1,275	10	10	2.02
May	37,853	98	38,626	1,246	1,217	10	10	2.02
June	35,957	99	36,320	1,211	1,172	10	10	2.15
July	35,496	98	36,220	1,168	1,180	11	11	2.25
August	34,344	98	35,045	1,130	1,137	11	11	2.25
September	33,731	97	34,774	1,159	1,175	11	11	2.25
October	34,776	98	35,486	1,145	1,128	11	11	2.25
November	33,419	98	34,101	1,170	1,195	11	11	2.38
December	33,671	98	34,358	1,108	1,143	11	11	2.27
1935								
January	34,804	95	36,636	1,182	1,231	11	11	2.25
February	31,948	98	32,600	1,141	1,146	11	11	2.40
March	35,868	98	36,600	1,181	1,153	12	12	2.48
April to June				1,257	1,221	10		
July to February				1,150	1,167	11		
% change				-8.5	-4.4	+10.0		
March				1,181	1,153	12		
% change				+2.7	-1.2	+9.1		

Sales and Class I price: Compiled from reports of Market Administrator.
Retail prices: Compiled from reports of the United States Department of Agriculture
Market News Service.

1/ See test for index used.

Table 26. Sales and retail prices of fluid milk
in the Evansville Sales Area.

Year and month	Class I sales of butter-fat	Milk re-ported as percent of estimated total sales	Estimated total Class I sales of butterfat	Estimated average daily Class I sales of milk equivalent	Retail deliv-ered price per quart	Retail store price per quart	Class I price per pound butterfat f.o.b. city
	Pounds	Percent	Pounds	Pounds	Cents	Cents	Cents
1934							
March	55,017	90	61,130	51,893	8.32	8.2	48
April	47,589	90	52,877	46,383		9	48
May	46,979	87	53,999	45,840	9		48
June	46,210	85	54,365	47,689	9	8-9	48
July	47,767	95	50,281	42,683	9	8-9	48
August	45,008	90	50,009	42,452	9	8-9	48
September	40,557	88.6	45,775	40,154	9	8-9	48
October	42,407	87	48,744	41,404	9.5	9-10	48
November	41,153	89	46,239	40,561	9.5	9-10	51.5
December	41,184	88	46,800	39,728	9.5	9-10	53
1935							
January	43,351	90	48,168	40,890	9.5	9-10	53
February	40,059	88	45,522	42,784	9.5	9-10	53
March	45,090	89	50,663	44,441	9.5	9-10	53
May to Sept.				43,764	9		
Oct. to Mar.				41,635	9.5		
Percent change				-4.9	+ 5.6		

NOTE: Percentage changes from March sales and prices were not calculated since
sales during that month appear to have been unduly high.

Sales and Class I prices: Compiled from reports of Market Administrator.
Retail prices: Compiled from reports of the United States Department of
Agriculture Market News Service.

Table 27. - Sales and retail prices of fluid milk in the Grand Rapids Sales Area.

Year and month	Class I sales of milk : Pounds	Milk reported as per-cent of estimated total Class I Sales : Percent	Estimated total Class I Sales : Pounds	Estimated average daily Class I sales : Pounds	Retail: delivered price per quart : Cents	Retail: store price per quart : Cents	Class I price per cwt. of 3.5% milk f.o.b. city : Dollars
1934							
August	3,850,687	97.9	3,933,286	126,880	9	9.0	1.85
September	3,809,520	99.7	3,820,983	127,366	9	9.5	1.85
October	3,920,693	99.0	3,960,296	127,751	10	10.0	1.85
November	3,758,861	99.0	3,796,829	126,561	10	10.0	2.10
December	3,848,021	99.6	3,863,475	124,628	10	10.0	2.10
1935							
January	3,906,824	99.0	3,946,287	127,300	10	10.0	2.10
February	3,575,805	99.0	3,611,924	128,997	10	10.0	2.10
March	3,928,662	99.0	3,968,345	128,011	10	10.0	2.10
August & September October to:				127,123	9		
March				127,208	10		
% Change					+ 11.1		

Sales and Class I price compiled from Reports of Market Administrator.
Retail prices compiled from reports of U. S. Department of Agriculture Market News Service

Table 28. Sales and retail prices of fluid milk
in the Kalamazoo Sales Area

Year and month	Class I Sales of Milk	Milk re- ported as percent of estima- ted total Class I Sales	Estimated total Class I Sales	Estima- ted av- erage daily Class I Sales	Retail deliv- ered and store prices per qt.	Class I price per cwt. of 3.5% milk f.o.b. City
	:Pounds	:Percent	:Pounds	:Pounds	:Cents	: Dollars
1934						
July	1,236,034	98	1,261,259	40,686	10	1.85
August	1,053,642	98	1,075,145	34,682	10	1.85
Sept.	1,043,354	98	1,064,647	35,488	10	1.85
October	1,078,968	98	1,100,987	35,516	10	1.85
November	1,062,866	95	1,118,806	37,294	10	1.85
December	1,145,373	95	1,205,656	38,892	8	1.85
1935						
January	1,211,198	97	1,274,945	41,127	8	1.85
February	1,144,550	98	1,179,948	42,141	8	1.85
March	1,196,868	95	1,221,294	39,397	10	2.00
July to November				36,733	10	
December to Feb.				40,720	8	
%Change				+ 10.9	-20.0	
March				39,397	10	
% Change				-3.2	+ 25.0	

Sales and Class I Prices compiled from reports of Market Administrator.
Retail prices compiled from reports of U. S. Department of Agricul-
ture Market News Service.

Table 29. Sales and retail prices of fluid
milk in the St. Louis Sales Area.

Year and month	Class I sales of milk	Milk reported as percent of estimated total Class I sales	Estimated total Class I sales	Estimated average daily Class I sales	Index of average daily Class I sales	Retail delivered price per quart	Class I price per cwt. of 3.5% milk f.o.b. city
	000 Lbs.	Percent	000 Lbs.	000 Lbs.	Per-cent	Cents	Dollars
1934							
April	16,824	99.8	16,858	562	102	11	1.85
May	18,091	100.0	18,091	584	106	11	1.85
June	17,928	100.0	17,928	598	109	11	2.00
July	18,229	99.7	18,284	590	107	11	2.00
August	17,482	99.8	17,517	565	102	11	2.20
September	16,167	99.7	16,216	541	98	11	2.35
October	16,923	99.5	17,008	549	99	11	2.35
November	15,676	97.9	16,012	534	97	11	2.18
December	15,769	99.8	15,801	510	92	11	2.00
1935							
January	15,952	99.6	16,016	517	94	11	2.00
February	14,709	99.5	14,783	528	96	11	2.00
March	16,783	99.9	16,800	542	98	11	2.22
Average				552	100		

Sales and Class I prices: Compiled from Reports of Market Administrator.

Retail prices: Compiled from reports of the United States Department of
Agriculture Market News Service.